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ABSTRACT

Papers and panel discussions on a wide range of issues of concern to practitioners in the field of graduate education are presented in this conference report. The publication begins with the program of the meeting and then goes on to report the substance of three plenary and three concurrent sessions. Session titles are as follows: "A National Study of Master's Education"; "The Future of Academic Science: Report of a Study by the Government-University-Industry Research Roundtable (GUIRR) of the National Academies of Science & Engineering & the Institute of Medicine"; "Professional Values and Ethical Issues in the Graduate Education of Scientists & Engineers: A Report on the Acadia Institute/CGS Project"; "Diversity through International and Minority Constituencies. Striking the Balance"; "Changing Role of Research in Master's Programs"; and "What To Do When Money Runs Out: The Administration of Graduate Education Under Conditions of Severe Fiscal Constraint: Values and Options." Speakers and panelists whose remarks appear in this report are: Nils Hasselmo, Don I. Phillips, T. Alexander Pond, John D. Wiley, Elizabeth Baranger, Gary Judd, Frank L. Morris, Sr., Mary Peterson, Elaine L. Cohen, Suzanne Reid-Williams, Donald N. Langenberg, Robert F. Jensen, M. I. Johnson, and Debra W. Stewart. Also reported are the awards presentation at a conference luncheon and details of a business meeting held during the conference at which the president of the Council of Graduate Schools (CGS), Jules B. LaPidus, delivered the annual Presidents Report. Final sections contain lists of officers and committees, a list of regional associations of graduates schools affiliated with the CGS, the Constitution of the CGS, its bylaws, a list of member institutions, and a list of sustaining and contributing members. (JB)

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Proceedings of the Thirty-First Annual Meeting

COUNCIL OF GRADUATE SCHOOLS

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December 3–6, 1991
Hyatt Regency Washington
on Capitol Hill
Washington, D.C.

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Proceedings of the Thirty-First Annual Meeting

COUNCIL OF GRADUATE SCHOOLS

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Edited by Nancy A. Gaffney

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COUNCIL OF GRADUATE SCHOOLS

31st ANNUAL MEETING

CGS ANNUAL PRE-MEETING WORKSHOPS

TUESDAY, DECEMBER 3, 1991

Coordinator of Workshops: Paul D. Jones,
Associate Dean for Graduate Programs, University of Louisville

Orientation and Training of Graduate Teaching Assistants
This workshop will explore ways of enhancing the TA experience as graduate schools prepare the future professoriate.

Faculty:
Leo Lambert, Associate Dean, Graduate School and Director, TA Training Program, Syracuse University
Alice Benston, Associate Dean, Graduate School, Emory University
Susan Ziegler, Associate Dean, Graduate Studies, Cleveland State University

Academic Program Review and Evaluation
This workshop will review policies and procedures for graduate program evaluation. Panelists will examine procedures used at institutions granting only master's degrees, as well as those offering master's and doctoral programs.

Faculty:
Robert Powell, Dean, Graduate College, Kent State University
Anthony Hickey, Dean, Research and Graduate Studies, Western Carolina University

Issues in Research Misconduct and Plagiarism
This workshop will deal with issues in the ethical conduct of research and scholarship including federal guidelines for dealing with allegations of misconduct and plagiarism, and university policies and procedures for managing such allegations.

Faculty:
Barbara Hansen, Professor of Physiology and Director, Obesity and Diabetes Research Center, University of Maryland, Baltimore
Gregory Aloia, Associate Vice President for Research and Dean, Graduate Studies, Illinois State University
Sally Pancrazio, Chair, Department of Educational Administration and Foundations, Illinois State University

PROGRAM

WEDNESDAY, DECEMBER 5, 1991

7:15 a.m.
Breakfast for Assistant and Associate Deans
Sponsored by The Education Resources Institute (TERI) and the Graduate and Professional School Financial Aid Services (GAPSFAS)

8:45–10:15 a.m.
Plenary Session I
A National Study of Master's Education

Presiding
Robert T. Holt, Professor, University of Minnesota

Nils Hasselmo, President, University of Minnesota; Chair, National Advisory Board for National Study of Master's Degrees
Barbara J. Solomon, Vice Provost for Graduate and Professional Studies/Dean, Graduate Studies, University of Southern California; Chair, Steering Committee of Graduate Deans for National Study of Master's Degrees
Clifton Conrad, Professor, University of Wisconsin-Madison; Director, National Study of Master's Degrees

10:15–10:45 a.m.
Break

10:45 a.m.–12:15 p.m.
Concurrent Sessions

1. Discussion of Master's Study

Presiding
Vivian A. Vidoli, Dean, Division of Graduate Studies and Research, California State University, Fresno

Clifton Conrad, Director, National Study of Master's Degrees

2. Discussion of Master's Study

Presiding
Judith S. Liebman, Vice Chancellor for Research/Dean, Graduate College, University of Illinois at Urbana-Champaign

Susan Millar, Co-Director, National Study of Master's Degrees
Jennifer Grant Haworth, Co-Director, National Study of Master's Degrees

3. The Future of Academic Science: Report of a Study by the Government-University-Industry Research Roundtable (GUIRR) of the National Academies of Science and Engineering and the Institute of Medicine

Presiding

Don I. Phillips, Executive Director, Government-University-Industry Research Roundtable

T. Alexander Pond, Executive Vice President Emeritus, Rutgers University; Member, Working Group on The Academic Research Enterprise

John D. Wiley, Dean, Graduate School, University of Wisconsin-Madison

12:15 p.m.

Lunch

2–3:15 p.m.

Plenary Session II

The New Assessment of the Research Doctorate

Presiding

Judson D. Sheridan, Vice Povost for Research/Dean, Graduate School, University of Missouri-Columbia

Speakers:

James Wyche, Member, National Research Council Committee for the Study of Research Doctorate Programs in the U.S.; Associate Provost, Brown University

Alan Fechter, Executive Director, Office of Scientific and Engineering Personnel, National Research Council

Alex Sedgwick, Dean, Graduate Studies, University of Virginia

George H. Jones, Dean, Graduate School of Arts and Sciences, Emory University

3:15–3:45 p.m.

Break

3:45–5:00 p.m.

Concurrent Sessions

4. Interinstitutional Cooperation

Presiding

Leslie Burl McLemore, Acting Director, Universities Center, Jackson State University

Roland Otto, Director, Center for Science and Engineering Education, Lawrence Berkeley Laboratory

Jean Girves, Associate Director, CIC Alliance for Success

Bettye Parker-Smith, Vice President for Academic Affairs, Tougaloo College; Tougaloo College-Brown University Consortium

5. Gender Issues in Graduate Education

Presiding
Catharine R. Stimpson, Dean of the Graduate School, Rutgers University

Ian Carmichael, Associate Provost/Associate Dean, Graduate Division, University of California, Berkeley
Susan Hartmann, Director of Women's Studies and Professor of History, Ohio State University
Donna L. Shavlik, Director, Office of Women in Higher Education, American Council on Education

6. Professional Values and Ethical Issues in the Graduate Education of Scientists and Engineers: A Report on the Acadia Institute/CGS Project

Presiding
Russell G. Hamilton, Dean, Graduate Studies and Research, Vanderbilt University

Speaker:
Judith Swayze, President, The Acadia Institute

Panel:
Luis M. Proenza, Vice Chancellor of Research/Dean, Graduate School, University of Alaska, Fairbanks
Elizabeth Baranger, Associate Provost for Graduate Studies, University of Pittsburgh
Gary Judd, Dean, Graduate School Rensselaer Polytechnic Institute

5–6 p.m.
Cash Bar available outside of Capitol Room

5:30–6:30 p.m.
Results of Assistant/Associate Deans Survey
Mark W. Clark, Assistant Dean, Graduate School, University of Northern Colorado

THURSDAY, DECEMBER 5, 1991

9–10:15 a.m.
Plenary Session III
Diversity through International and Minority Constituencies: Striking the Balance

Presiding
Hector Garza, Associate Dean, Graduate School, Easten Michigan University

Frank L. Morris, Sr., Dean, Graduate Studies, Morgan State University

Claudia Mitchell-Kernan, Vice Chancellor for Graduate Programs/Dean, Graduate Division, University of California, Los Angeles
Mary Peterson, Senior Director for Planning and Development, NAFSA: The Association of International Educators
Peter Syverson, CGS Director of Information Services

10:15–10:45 a.m.
Break

10:45 a.m.–Noon
Plenary Session IV
Reauthorization of the Higher Education Act of 1965

Presiding
Thomas J. Linney, CGS Vice President and Director of Government and Association Relations

Panel:
Edward M. Elmendorf, Vice President of Governmental Relations, American Association of State Colleges and Universities
Carole Glover, Executive Coordinator, National Association of Graduate and Professional Students
John C. Vaughn, Senior Federal Relations Officer, Association of American Universities

12 Noon
Lunch
Presentation of Awards
Gustav O. Arlt Award in the Humanities
Presented by Catherine Lafarge, Chairman of the Arlt Award Committee and Dean of the Graduate School of Arts and Sciences, Bryn Mawr College

CGS/University Microfilms International Distinguished Dissertation Award
Presented by Charles E. Tarr, Chairman of the CGS/UMI Award Committee, and Dean of the Graduate School, University of Maine

2–3:00 p.m.
Business Meeting

Presiding
Catherine Lafarge, Dean of Graduate School of Arts and Sciences, Bryn Mawr College, and Chair, Board of Directors, Council of Graduate Schools

Greetings from President of Canadian Association of Graduate Schools
Chauncey D. Wood, Dean, School of Graduate Studies, McMaster University

Report of Chair
Catherine Lafarge, Chair, Board of Directors, Council of Graduate Schools

Report of CGS Advisory Committee on Minorities in Graduate Education
Leslie Burl McLemore, Chair

Report of President
Jules B. LaPidus, President, Council of Graduate Schools

Other Business

3–5:00 p.m.
Concurrent Sessions

7. Graduate Education in the Health Sciences: Academic Integrity

Presiding
Raymond H. Cypess, Dean, College of Graduate Health Sciences, University of Tennessee, Memphis Center for the Health Sciences

3–4 p.m.
The Demographics of Misconduct
Barbara Mishkin, Counsel, Hogan and Hartson

Prevention and Education Models
Eleanor G. Shore, M.D., Dean of Faculty Affairs, Harvard University Medical School

4–5 p.m.
Outcomes Assessment
Terry M. Mikiten, Associate Dean, University of Texas Health Science Center at San Antonio, Graduate School of Biomedical Sciences

8. Graduate Education in Master's Only Institutions

Presiding
Virginia Falkenberg, Dean, Graduate Studies and Research, Eastern Kentucky University

Effects of the Marketplace on the Master's Degree Programs
Anthony A. Hickey, Dean of Research and Graduate Studies, Western Carolina University

Changing Role of Research in Master's Programs
Elaine Cohen, Dean, Graduate School, College of Notre Dame

Can the Master's Degree Survive as a Stepping Stone to Doctoral Education
Wilbur B. Clark, Graduate Dean, Southern University
Suzanne Reid-Williams, Dean, Graduate and International Studies, Western Illinois University

9. A Call for More Leadership: The Graduate Deans' Role in Improving Access for Minorities in Graduate Education

Presiding

Jacqueline Looney, CGS Dean in Residence and Hector Garza, Associate Dean, Eastern Michigan University

Panel:

Robert Crutchfield, Department of Sociology, University of Washington

Sarita Brown, Assistant Dean, Graduate School, The University of Texas at Austin

Winfred Stone, Associate Dean, Graduate School, Bowling Green State University

5:30–6:30 p.m.

Wine and Cheese Reception

Hosted by the CGS Advisory Committee on Minorities in Graduate Education. Come and meet the members of the committee and find out about CGS activities related to minorities in graduate education.

FRIDAY, DECEMBER 6, 1991

Coffee will be available beginning at 8:30 a.m.

9:00 a.m.–Noon

Plenary Session V

What To Do When Money Runs Out: The Administration of Graduate Education Under Conditions of Severe Fiscal Constraint: Values and Options

Presiding

Richard Attiyeh, Dean, Graduate Studies and Research, University of California, San Diego

Speaker:

Donald N. Langenberg, Chancellor, University of Maryland System

Panel:

Robert G. Jensen, Dean, Graduate School, Syracuse University

Mack Johnson, Associate Vice President for Graduate Studies, Research, and International Programs, California State University, Northridge

Debra W. Stewart, Graduate Dean, North Carolina State University at Raleigh

12 Noon

Adjournment

Plenary Session I

Wednesday, December 4, 1991

A NATIONAL STUDY OF MASTER'S EDUCATION

Presiding: Robert T. Holt, *Professor, University of Minnesota*

Speakers: Nils Hasselmo, *President, University of Minnesota; Chair, National Advisory Board for National Study of Master's Degrees*

Barbara J. Solomon, *Vice Provost for Graduate & Professional Studies/Dean, Graduate Studies, University of Southern California; Chair, Steering Committee of Graduate Deans for National Study of Master's Degrees*

Clifton Conrad, *Professor, University of Wisconsin-Madison; Director, National Study of Master's Degree*

Nils Hasselmo

Before I comment on the study of master's education, let me just say a word of thanks to Bob Holt, who has served the University of Minnesota so well as Graduate Dean for a decade. Bob is an old friend. I have come to know him as an extraordinarily creative and energetic person. He has taken many important initiatives at the University of Minnesota in strengthening graduate education, both programmatic initiatives and initiatives providing support for graduate students and young faculty members. I know that Bob has also played an important leadership role within CGS. Bob, I salute you for your work both for the University of Minnesota and at the national level.

Now to the matter at hand: master's education.

First of all, congratulations to Jules LaPidus and CGS for taking the initiative for this study. Congratulations and thanks to Clif Conrad, Susan Millar and Jennifer Grant Haworth. The three of you have completed an outstanding piece of work. We are deeply indebted to you for your insight and dedication. Thanks also to Barbara Solomon and her advisory committee. And thanks to the members of the National Advisory Board that I've had the pleasure of chairing. Both of these groups have worked hard, have issued many challenges, have been unsparing in their suggestions, and have helped ensure the success of the project.

I have a special affection for the master's degree—having in my vita a "magister" degree from the University of Uppsala. Somehow I feel that a "magister" has a ring to it that even "doctor" doesn't quite match. If I sound "magisterial," you should know that I have the credential for it!

What we have before us is, I believe, an excellent study that will help us understand master's education much better, and that will help shape master's education in the 1990s and beyond.

This study maps territory that it has been remarkably difficult to see clearly. We have known that the landscape of master's education has been changing dramatically over the past few years. (Maybe because it has been unplanned—by and large—it has proceeded with much more than the usual glacial pace of curricular change.) We now have a good outline, a typology that makes sense out of the changes we have vaguely perceived.

The study is sensitive to those who inhabit the territory of master's education—not only to the faculty's or administrator's perspectives but to the perspective of students, alumni, and employers.

The study is sensitive to a variety of features of the landscape of master's education—the curriculum, the students' learning experience, the faculty's attitudes, the organization, the support provided by the institution.

The study is certainly timely—coming at a time when the territory of higher education is becoming dramatically more difficult to cover with our shrinking resources—and when we need more than ever to be sure that we *do* cover the most important parts of our territory and cover them very well. *All* of our stakeholders are becoming increasingly demanding. We need to be sure of our direction. A good map is indispensable.

I would like to highlight what I see as some major issues. As presidents are accustomed to doing, I will try to throw out some general questions and look to you, the deans, to understand what I mean and to solve the problems.

What has been happening to the relationship between education and the job market?

Two forces seem to be at work: first, what we might call the "re-liberalization" of undergraduate education, and second, the demand for credentialing of a variety of new competencies.

In spite of the enormous enrollments in undergraduate business programs, I believe that the underlying trend in undergraduate education is strongly towards something that resembles liberal education. This means, of course, an emphasis on *basic* skills, competencies, and kinds of understanding rather than on specific vocational/professional competencies. This has put new pressure on the master's degree as the "vocational/professional degree."

The enormous expansion of master's programs, of course, indicates that a whole variety of *new* competencies now cry out for credentialing.

How have the universities responded? We have responded by expanding master's education enormously. In one way you can say that the master's degree has proven itself beyond our wildest expectations—once again. It has shown a remarkable vitality in spite of much questioning, and much neglect.

The question is then, how should the universities respond? The massive expansion that has taken place certainly presents a number of issues having to do with the quality of the programs provided. It raises questions concerning

the ethical standards that should characterize the many new professions, as they have been a concern in the older professions. And, it raises questions concerning the financing of master's education. Who should pay?

Thus, I would highlight as questions number one, two, and three, those of quality, ethics, and financing.

Issue Number One
How can we ensure quality master's education?

I certainly prefer to see the quality issue addressed within each institution rather than in terms of additional, massive national accreditation processes. Efforts to define competencies, educational steps that produce desired competencies, and the measurement of outcomes are found in connection with some more traditional master's programs, for example the MBA. Can and should these approaches be applied more generally within professional master's education?

The pressure for national accreditation is going to be very strong. I believe that it is very important for the CGS to take a strong hand in seeing to it that the necessary accreditation processes are structured in appropriate ways. A balance needs to be struck between the demands of the emerging professions and the imperatives of good education as viewed by other stakeholders.

Issue Number Two
What role should the universities play in the establishment of codes of professional behavior in the emerging professions?

The professionalization that we are witnessing raises questions of responsibility and accountability. What are the ethical standards that are appropriate to these new professions? These are, of course, questions that are prominent within such established professions as those of law and medicine. Are there "Hippocratic oaths" that should be adopted for the new professions? What should be the role of the universities in establishing such standards within master's programs?

Issue Number Three
Who should pay for master's education?

Undergraduate and doctoral education both have their systems of financing. Public and private fellowships and loans and teaching and research assistantships provide the backbone of the financing. Are these appropriate means of financing professional master's education as well? Or, should the emerging professional programs be financed with heavier dependence on payment by the students, or possibly the prospective employers? Probably more than one model must be used. What is the responsibility of the universities in defining and implementing various approaches?

I have been able to nibble at only some of the many questions raised by this excellent study. I find it a very tantalizing study, and one that I expect will

profoundly influence what we do in regard to master's education at the University of Minnesota. I suspect that, like me, your presidents around the country will be looking to you, the graduate deans, for guidance and leadership in answering these important questions.

Concurrent Sessions 3

Wednesday, December 4, 1991, 10:45 am

THE FUTURE OF ACADEMIC SCIENCE: REPORT OF A STUDY BY THE GOVERNMENT-UNIVERSITY-INDUSTRY RESEARCH ROUNDTABLE (GUIRR) OF THE NATIONAL ACADEMIES OF SCIENCE & ENGINEERING & THE INSTITUTE OF MEDICINE

Presiding: Don I. Phillips, *Executive Director, Government-University-Industry-Research Roundtable*

Speakers: T. Alexander Pond, *Executive Vice President Emeritus, Rutgers University; Member, Working Group on The Academic Research Enterprise*

John D. Wiley, *Dean, Graduate School, University of Wisconsin-Madison*

Don I. Phillips

Preface

One of the major areas of interest for the Research Roundtable has been academic research in the United States. In 1987, the Roundtable Council assembled the Working Group on the Academic Research Enterprise to study this issue. Among the many concerns driving this effort were the changing nature of research, the changing demographics of the college-age population, the increasing financial and human resources required for carrying out research and the growing expectations placed on academic research. These concerns raised questions about the role of universities and colleges within the U.S. research system, the nation's ability to support academic research, the management of research institutions and the responsibilities of those who sponsor research.

Charge to the Working Group

The charge to the Working Group was four-fold: to examine recent trends affecting academic research in the United States; to consider the impact of these trends on the current academic research enterprise[1]; to identify the longer-term issues that will affect the enterprise in the decades ahead; and to explore ways in which the enterprise might best meet the challenges of the future.

It should be emphasized that the Working Group was asked to focus its attention on the broad, underlying issues affecting the longterm health of academic research, rather than to dwell on the narrower concerns of the day. In addition, the group was asked to limit its study to the sciences and

engineering. Other areas of academic scholarship—the arts and humanities, for example—also merit analysis, but are beyond the scope of the Government-University-Industry Research Roundtable.

Working Group Activities

The Working Group divided its work into two phases. During the first phase, the Group addressed the status of the current academic research enterprise, reviewed statistical evidence of recent trends, and identified pertinent issues for further consideration. A resulting discussion paper was published in October 1989[2].

During the second phase, the Working Group conducted further analyses of issues identified in the October 1989 discussion paper, paying particular attention to their implications for the future of U.S. academic research. In addition to holding numerous meetings itself, the Working Group convened five special workshops focused on the phase-two objectives. The workshops, held from March through October 1990, addressed the following topics: the changing organization and management of universities; the future role of universities; the changing conduct of research and its implications for funding agencies; the future of scientific and engineering education; and the future funding of academic research. [Workshop participants will be listed in an appendix.]

For international perspectives on the issues being addressed, the Working Group benefited from two symposia co-sponsored by the Research Roundtable and the National Science Foundation: in March 1989, a symposium on the historical evolution of the research systems of six countries: the United States , Japan, the Soviet Union, the United Kingdom, Germany, and France[3]; in February 1991, a symposium on future national research policies, presented and discussed by senior government officials and leading scientists directly involved in formulating research and higher education policies in the United States, Japan, the Soviet Union, the United Kingdom, Germany, and the European Community.[4]

The current program of activities will culminate in a national conference on the future of the U.S. academic research enterprise, scheduled for December 1991. Conference participants will be asked to assess the range of options identified by the Working Group and to explore the possibilities for national consensus on the future of the enterprise.

Major Themes of Discussion Paper

This discussion paper presents the Working Group's thoughts from its second-phase deliberations and inquiries. The Research Roundtable hopes this discussion paper will stimulate debate within the research community and the public at large about the future course of academic research in the United States.

Part One presents an optimistic and challenging vision for the future of U.S. academic research. In this vision, the Working Group outlines the significant

changes that it believes lie ahead for the research community. These include an emerging global research system, a broadened research workforce, new communication systems and an expanded role for academic research in advancing social, health and economic goals.

Part Two outlines the steps necessary to pursue this vision. In the view of the Working Group, two processes need to begin simultaneously.

- First, universities and research sponsors need to take immediate, concrete steps to respond to the changes occurring within the enterprise. The Working Group believes that decisionmakers at the highest levels need to set overall research priorities; universities and funding agencies need to clarify their respective responsibilities for funding university-based research; universities and funding agencies need to update their organizational and management strategies; the research community and universities need to adapt to societal changes emanating from changing demographics and changing value systems among young investigators; and universities need to improve the quality of science and engineering education, especially at the undergraduate level.
- Second, all those with a stake in academic research—including the political, corporate, and public interest sectors—should begin to think strategically about options for the future of the research enterprise. To start this process, the Working Group describes a heuristic framework for thinking about the future. Central to this framework is a better understanding to the large-scale forces that affect the enterprise: the pace and nature of research, the economy, politics and international events. The Working Group sets forth several "scenarios" for the future size and structure of the enterprise based on a consideration of possible interactions of these forces. The Working Group then identifies key policies or programs, specific to each scenario, that would be required to maintain the quality and productivity of the enterprise.

The Working Group outlines several fateful choices which lie at the heart of these near-term decisions and strategic options. These choices will shape the capacity and characteristic of the U.S. research enterprise over the next several decades.

Part Three describes the changing environment for decisionmaking. Wise decisionmaking will require a broad perspective that encompasses the full range of elements essential to the enterprise—people, programs, infrastructure and the necessary financial support. In the view of the Working Group, new approaches to decisionmaking are called for, with implications for new forms of leadership and a sense of common purpose. In the presentations that follow, Alex Pond will present an overview of the main themes throughout the paper, and John Wiley will focus on the issues that relate most directly to graduate education.

REFERENCES

[1] As used by the Working Group, the U.S. academic research *enterprise* refers generally to the group of American universities and colleges performing significant research in the sciences and engineering. The U.S. research *system* refers collectively to all institutions that perform or fund research, including universities and colleges, federally and state-supported laboratories, federal and state research funding agencies, foundations and industry.

[2] Government-University-Industry Research Roundtable, *Science and Technology in the Academic Enterprise: Status, Trends and Issues*, Washington, D.C.: National Academy Press, October 1989.

[3] Government-University-Industry Research Roundtable, *The Academic Research Enterprise Within the Industrialized Nations: Comparative Perspectives*, Washington, D.C.: National Academy Press, March 1990.

[4] Government-University-Industry Research Roundtable, *Future National Research Policies Within the Industrialized Nations*, Washington, D.C.: National Academy Press, December 1991. ■

BROAD ISSUES

T. Alexander Pond

John Wiley and I will briefly preview the Working Group's study which is to be published around the end of the year. We split our report at about the boundary of the campus: I will summarize the factors, mainly external, which appear to shape our future, while John will deal with more immediately interesting findings related to graduate education.

The Group identifies four major forces acting on the enterprise, evident both in the near term issues facing us and as insistent pressures for systemic change:

The nature and pace of research themselves create continuously growing opportunities and expectations. There has never been a more exciting time to be in our business. The extraordinary rate and breadth of discovery are reinforced by a millennial advance in the capability: the digital revolution. Increasingly complexity in every field assures that the cost of access to frontier research will continue to outstrip inflation. Increasing societal dependence on our products is leading to demands for new services, for example in economic development and technology transfer. To contain costs and to create access itself, institutions are under pressure to develop new modalities for research, such as interinstitutional consortia and extra-departmental vehicles for multidisciplinary research.

Economic conditions obviously constrain the enterprise for the foreseeable future. Intense competition for research resources is unavoidable, between regions and countries, and within and among disciplines. Priority setting with far reaching consequences for all parts of the enterprise is going to occur in some fashion.

Political interests equally evidently will be decisive in determining our future. At ten billion federal dollars per year in support of academic research,

we are irretrievably in play. Regional recognition of the link between academic research and economic development creates new tensions as well as new constituencies for the research universities. The sensitivity of the enterprise to public perceptions has been dramatically demonstrated in several directions in recent months. Traditional processes for evaluation of research which have long served its quality well are under strong pressure to add additional criteria.

The international context of the enterprise is clearly in rapid flux, with great consequence for this country's options in research. We must expect company at the frontiers, and reflect in our plans the openness, or lack of it, of the community developing there.

In attempting to visualize the likely effects of different combinations of these four forces, the Group found a simple parameterization instructive. For the purpose of characterizing change in the academic research enterprise, its status can be reasonably specified by two measures: size (in total number of departments and personnel engaged) versus institutional scope in research (representing the distribution of institutions between comprehensive and specialized research missions). These define a policy plane around the status quo whose least description is the 3x3 array formed as both the system-size and research-scope measures vary from "less than at present," through present values, to "more than at present."

There are thus eight general pathways away from the status quo, and our future can be characterized by one of nine scenarios of future changes to the forces (since the status quo itself is clearly not presently supported by a stable combination of forces). These span a diverse set of futures between what would be, from a place inside our grove, best and worst case scenarios: the future in which the enterprise is increased in size and in comprehensiveness, versus its diagonal opposite on the plane, in which the number of research institutions is decreased and missions are restricted. For each of the scenarios, the combination of forces required to produce the result points to policy directions which would be needed if that direction of change were chosen: decisions on the environment for academic research such as financial resource availability, human resource needs, locus of decision making and dependence on international cooperation.

The Group is impressed by the need to avoid drift on this policy plane. If the quality and vigor of the enterprise are to be preserved into another century along any of the pathways likely to be open to us, careful planning involving many constituencies will be necessary. Continuation of our business as usual will carry high costs in suboptimal choices, both for the pressing near term issues and in the strategic long term. We conclude that the academic research community will not play its appropriate role in these vital tasks without change in the effectiveness of its participation in the governance of the nation's research.

The Group notes that, in the years since the end of World War II, the voice of the country's scientific and academic leadership in the deliberations on

national purposes in research has diminished significantly. While this decrease in coherence and impact can be attributed to the great increase in the size and diversity of the enterprise and to the addition of many new social purposes to the missions of the research universities, the Group concludes that a new approach is needed in the governance of the academic research enterprise, to reengage all of its constituents in assessing broad policies and contributing to their formation. Much stronger interaction is needed, including feedback as well as communication, among all whose best informed input and support is needed for optimum decisions: faculty principal investigators, institutional leaders, federal agency executives, corporate research executives, and state and congressional research leadership.

There is much to praise in the current mechanisms intended to draw together groups which share responsibility for the health of the enterprise. NSF, NIH, DOD, and DOE each have scientific advisory bodies which include leaders of academic and corporate science. D. Allan Bromley is leading OSTP in reenergizing the FCCSET process for interagency coordination in important research initiatives. The National Academy continues to speak from time to time for the scientific and technological community on important issues and in response to a federal inquiry. In GUIRR, the Academy has created a body which looks at the whole research agenda from the joint perspectives of the governmental, corporate and academic worlds.

Nevertheless, there are evident lacunae and insufficiencies in these provisions. Appropriate state leaders, in spite of significant recent increases in state support of academic research, are not included. The scientific societies do not actively or systematically address broad issues of research policy. Participation of the leadership of the research universities in discussion of national research issues is episodic.

The Group urges that new approaches to decision making be considered which incorporate concensus-building among all sectors of responsibility. Strengthened participation by university investigators and leaders in policy discussions is a particular need. It is necessary to recognize, however, that for increased participation to be effective, many expectations and behaviors must change. Assurances of inclusion in planning discussions by agencies must be met with undertakings to responsibly represent the entire enterprise.

This is nontrivial recommendation. There has been a traditional academic reluctance to become party to the development of federal policy because of possible loss of institutional autonomy. While this continues to be an essential concern, I for one am convinced that the risk from closer collaboration in policy development is manageable. Indeed, without such evidence of responsible involvement in these vital aspects of the future of our enterprise, the voice of academic science in setting broad research policy will weaken still further; the possibility of building the new support that most of the constructive outcomes among our options for the future requires will be seriously diminished.

From the other flank, there are those who reject the possibility that the research community can contribute to the analysis of transcendent policy questions. Thus, in OTA's study earlier this year, *Federally Funded Research: Decision for a Decade*, at p. 10: "History cautions against the expectation that the scientific community will set priorities across fields and research areas. Congress must instead weigh the arguments within each area against desired national outcomes."

We will be interested to hear the Council of Graduate Schools' reactions to this and other issues posed by the Working Group. ■

FATEFUL CHOICES: THE FUTURE OF THE U.S. ACADEMIC RESEARCH ENTERPRISE

Implications for Graduate Education

J.D. Wiley

Introduction

The first sentence of the GUIR Report *Fateful Choices: The Future of Academic Research Enterprise* sets a promising tone that could hardly fail to draw CGS readers eagerly into the text:

> "The academic research community in the United States is headed toward an era of unparalleled discovery, productivity, and excitement."

Readers will quickly find, though, that this optimistic vision may or may not be realized. Hence, the overall theme—"Fateful Choices." Alec Pond has provided a broad outline and summary of the report. My task is to focus on those aspects most directly affecting graduate education which, given the context, I will take to mean the training of PhD students.

Before turning to that task, I would like to address what is likely to be a common initial reaction to this report: that there is nothing wrong with the academic research enterprise that could not be cured by higher funding levels; and that inadequacy of research funding is the only thing standing between us and a realization of our fondest visions of the future. For those who are tempted to yield to this reaction, I would like to make two points:

1. This report is not intended to be read as a stand-alone document. It is a sequel to an earlier GUIR Roundtable report[1] containing voluminous documentation of the current status of the academic research enterprise and the paths by which we arrived at that status. Although a few of the salient trends and statistics are carried forward and summarized in he present report, all serious readers should obtain a copy of the earlier report and judge for themselves the extent to which academic research has been underfunded in recent years, and the likelihood of doing significantly better in the near future.
2. The Working Group responsible for preparing this report intentionally avoided prescriptions, pat solutions, and anything that might be dismissed

as "special pleading." The academic research enterprise is, after all, only one of many public endeavors for which credible claims can be made for substantially increased funding. Rather, the Working Group attempted to deal with those issues that are unique to academic research, and to establish a framework for further analysis, discussion, and strategic planning.

This is not to deny the large and growing gap between what we are able to accomplish within existing funding constraints and what would be possible for the (present-sized) enterprise to accomplish with increased funding levels. Within the framework for discussion outlined by the Working Group, however, the least likely outcome of a simple increase in research funding would be for the system to remain at its present size with its present configuration of institutions. Rather, it is likely that we would simply repeat today's funding crisis in the near future, but at a larger scale. The academic research enterprise did not arrive at this point through careful strategic planning, but we are most unlikely to achieve our vision of the future without it.

The Environment

Turning now to the implications for graduate education, I would like to begin by restating the four factors identified by the Working Group as setting the environmental context within which the academic research enterprise will have to evolve and adapt in the coming years. They are, without elaboration here:

1. a global research system;
2. a diverse research workforce;
3. new communications technologies; and
4. an expanded role for academic research.

Leaving aside #4 for now, these environmental factors will unquestionably have a profound effect on the conduct of academic research and graduate education regardless of the future paths along which we evolve. All of the present research universities and all universities that aspire to join that group will need to address these factors strategically if they expect to be significant participants in the research enterprise of the future. These factors are so broad and general, though, that they provide a great deal of latitude for institutions to devise successful strategies that take advantage of their particular circumstances (again, almost independently of the nine different "scenarios" presented in the report as a framework of large-scale organizational planning).

Regarding #4, an expanded role for academic research, what is described in the report is an increasing importance of the present role and an increasing involvement in the processes of transferring research results into practical and commercial applications.

There can be little doubt that universities conduct a major (and increasing) fraction of all basic research in the U.S. Indeed, the earlier GUIR Roundtable report[1] estimates that the fraction of U.S. basic research carried out by universities increased from about 25% in the early 1950s to more than 50% in

1970, and that the percentage has remained at approximately 50% to the present. These are very likely underestimates, as private-sector research organizations label as "basic" many activities that university researchers would consider strongly applied research, if not early development. It is interesting that, of the 247 Nobel Prizes that have been awarded in medicine, chemistry, and physics since 1901, fully one third (82) have been for work done at U.S. universities. Only 13 went to U.S. research groups at organizations other than universities, and three of these involved collaborations with universities. Included among these awards are many for work that has subsequently led to commercially important products or, indeed, to entire industries. (eg: streptomycin, CAT scanners, NMR, MASERS and LASERS, the entire underpinnigns of modern biotechnology, and scientific contributions crucial to the application of several classes of chemicals and engineering materials.) That the researchers who carried out this work with graduate and post-doctoral students were simultaneously training the next generations of scientists and engineers makes the work more than doubly important to the nation.

University dominance of the U.S. basic research effort is likely to increase as the list of once-eminent industrial research laboratories that have been closed or converted to short-term R&D continues to lengthen. At the same time, however, the report labels as an "urgent challenge for the future" the need to "transfer the knowledge gained from basic research more rapidly to the nation's commercial sector." Underlying this observation is a host of factors, not the least of which is that the support of a large academic research enterprise requires a large and healthy economy. It has always been the case that the level of support for even the most basic scientific and engineering research depends on the expected eventual payoff in terms of solving important social and economic problems. Still, the trends and forces identified in the report appear to call for more aggressive technology transfer.

This "urgent challenge," depending upon exactly how it is interpreted and met, could well carry more profound implications of graduate education than any other aspect of the report. In the spirit of the Working Group's practice of crystallizing issues for debate rather than entering the debate directly, I will simply point out that this issue is one that deserves the most serious reflection and discussion by all interested parties. Is there an appropriate balance (in universities) between basic and applied research? Are there types of applied research that are simply inappropriate as vehicles of graduate education? Do we have adequate guidelines for the appropriate division of faculty time among teaching, research, and direct involvement in technology transfer or related commercial activities? Do we have adequate guidelines for all parties to follow in avoiding conflicts of interest? Should we be devising more flexible PhD programs that allow students to move more easily between periods of university work and commercial employment (transferring technology as it is being developed)? These and many other issues are already being faced at CGS universities. But if, as the report suggests, the entire academic research enterprise is being moved inevitably into close working relationships with the

commercial sector (and, very likely, more research that would once have been called applied), it is unlikely that many of our current guidelines and practices will suffice.

One graduate education issue deserves special mention in this context, as it received considerable discussion in the Working Group and has been a matter of growing concern in graduate schools around the country. That issue is the lengthening time taken to earn a PhD. Certainly one of the most important ways universities transfer technology to the commercial sector is by producing graduates who have helped develop that technology and who take it with them to commercial jobs. That being the case, if students are taking longer than necessary to obtain PhD degrees, then we have a serious inefficiency in the system.

In 1960, the median (registered) time required to earn a PhD in the natural sciences or engineering was 5.0 years. Today, that number is 6.4 years and still increasing. The average age of PhD recipients last year was 33.8 years (31.2 years in the natural sciences and engineering). Even without another 2–3 years of postdoctoral work, the degrees are costing more and the graduates are facing significantly shortened careers. (And those that do spend some time in postdoctoral study and then take tenure-track faculty jobs can easily be facing their tenure decision at age 40 or more. Small wonder that our "young" faculty are finding the tenure process increasingly stressful, or that fewer students are expressing an interest in academic careers!) To the extent that longer PhD times are justified by the complexity of the research, they represent one of the quickest and most significant ways in which we could affect the overall efficiency and credibility of the system.

The Configuration of Academic Research Institutions

As Alec Pond described, the bulk of the report is devoted to discussing nine possible scenarios that result from changing (or not) the overall size of the academic research enterprise and/or the configuration of academic research institutions. Three of the nine scenarios involve an increase, a decrease, or no change in the overall size of the enterprise within the present distribution of institutional scopes and missions. These three scenarios all (even the status quo) have significant implications for the nation in terms of the quantity of research accomplished and the supply of scientists and engineers. They would not appear to have a major impact on graduate education *per se*, however.

Changing to a configuration in which we have either many more "comprehensive" universities or many more "specialized" universities, on the other hand, could have major implications for graduate education. In particular, the number and degree of specialization of research institutions has major implications for any given institution's strategies for student and faculty recruitment, for student advising (matching student interests with institutional capacities), course delivery (especially the delivery of specialized, advanced materials), and resource sharing. To put this in perspective, it is worthwhile to survey the present configuration of academic research institutions in the U.S.

Although we have more than 2100 4-year colleges and universities in the U.S., only about 70 of them (3.3%) are classified as "Research I Universities." These research universities are distributed among 32 of the 50 states, conduct more than 80% of all the funded academic research, and produce more than 70% of all the PhDs. Thus, the "academic research enterprise" actually involves a relatively small number of schools. Even these numbers hide a significant "lumpiness" in that the top 20 universities account for more than a third of all research expenditures and a third of all PhDs produced, and are located in only 13 states. All of these schools would likely qualify as "comprehensive" under the Working Group's scheme.

Interestingly, in 1906, there were only about 15 "major research universities" in the U.S. Today, all but 4 of those institutions are still among the top 20, and 9 of the 15 are still among the top 15 in total research volume and the production of PhDs. The new entries are all large public universities that have displaced relatively smaller private universities. Thus, there has been a significant "payoff" for early investment, and a high cost (affordable only by states willing to invest heavily in rapid expansion) associated with entering the uppermost ranks on a timescale of a few decades. Few industries have seen such a small turnover among the ranks of their largest companies. In view of this small turnover at the highest ranks, and the present existence of some 70 Research 1 universities located in every region and every populous state in the country, it is likely that any reconfiguring of the academic research enterprise will be overwhelmingly confined to that group, i.e.: It seems unlikely that even under significant growth scenarios there will be very many additions to or deletions from the present list of research universities.

If this assumption is correct, what are the extremes of possible reconfigurations among the roughly 70 institutions? If all 70 institutions grew to sizes that equaled the average of the top 20 institutions (and if the latter institutions remained at about their present sizes), the academic research enterprise would be capable of producing about 50,000 PhDs/year at a cost of about $7 B/year above current academic research expenditures (a total annual cost of about $22B compared to current annual research expenditures of about $15B). This represents a roughly 50% real increase in the enterprise exclusive of the costs associated with ramping up the research infrastructures of the 50 or so smaller institutions.

In the past, increases of a similar magnitude have occurred in times as short as six years during periods of rapidly increasing demand for PhD scientists and engineers. Given that our PhD production has been nearly static for more than ten years, we are unlikely to see a rapid rise in demand in any near-term six-year period. It is also not clear that the nation needs or can sustain such a large number of large comprehensive universities. It would imply a great (possibly excessive) increase in the duplication and redundancy of the most specialized departments and facilities, for example. Nevertheless, the size and cost estimates provide useful benchmarks for a scenario in which the nation

moves toward the development of a larger number of similar-sized comprehensive research universities. This is likely the most expensive of the nine scenarios presented in the report.

How would such a scenario affect graduate education? The largest comprehensive research universities today are, in effect, "national" universities, drawing graduate students from all over the country because of their rich arrays of programs and facilities. Entering graduate students often have only a vague idea that they would like to do graduate work in "biology," for example. They perceive that they are more likely to find a compatible program and research advisor at a school that has a wide range of offerings in the biological sciences, and are willing to enroll in a distant school to maintain the broadest range of options. In a system having a larger number of large, comprehensive universities, each institution would presumably become more "regional" in that students would have less incentive to travel across the country for a program that is (at least apparently) available locally. With the greater redundancy of programs, competition for the best students and faculty would be intensified, causing upward pressure on costs. From a student's point of view, though, this would be an ideal "buyer's market."

It is also an inherently unstable system. Independently of any coordinated national policies that push the system toward a more homogeneous set of large, comprehensive research universities, those schools with the most aggressive and successful private fundraising programs or other competitive advantages will use them, and, in the end, the system may not look much different from the present except for the overall scale and the rankings on lists of size or quality (which will continue to change as some schools move up the lists, displacing others downward).

The other major set of scenarios, in which schools become individually more specialized, emphasizing a greater degree of complementarity and cooperation at reduced levels of duplication and competition, has a great deal to recommend it and is discussed extensively in the report. With adequate national planning, this option reduces duplication and competition-driven cost pressures, and provides more institutions with a claim to national prominence.

As the report notes, a smaller enterprise (but "at sustained funding no less than current level") consisting of fewer comprehensive and more specialized institutions is likely the most inexpensive option in terms of infrastructure investments and annual operating costs. To benchmark this scenario with averaged numbers: If the present research expenditures were distributed more-or-less equally among the 70 Research I universities, each institution would have annual research expenditures of about $160M. Currently, about 25 institutions are at or above that level, and 45 are below. Initially, these funds would be enough to sustain about the current number of investigators and current graduation rates but, unless funding increases kept up with inflation, the overall enterprise would stabilize at a lower level (fewer investigators, fewer graduates). Theoretically, this scenario provides the lowest level of cost

inflation by minimizing duplication, but the cost of maintaining current productivity levels will increase in any case.

As emphasized in the report, the "specialization" scenarios require by far the greatest degree of inter-institutional cooperation and communication. These scenarios would bring more multi-campus collaborations, more remote delivery of course and seminars (made affordable through improved communications networks and teleconferencing facilities), and probably a much greater rate of student transfers among institutions. To the extent that the nation maintained fewer specialized research facilities, there might also be increased travel among institutions, although part of the logic of specialization is to concentrate specialists and their facilities at fewer places. Students who knew what they wanted would have fewer (but, presumably, better) options to choose from, and faculty advisors would have to do more careful and thorough jobs in steering students to those options that are "right" for them, including urging students to transfer to another school if they have made the wrong initial choice.

Conclusion

The GUIR Roundtable report "Fateful Choices: The Future of the Academic Research Enterprise" presents a valuable framework which can guide strategic thinking about how the U.S. can meet its scientific and engineering needs at a cost that is affordable and politically realistic. The report calls for extensive debate and for mechanisms. In the coming debates, it will be very important for CGS institutions to speak up regarding their institutional missions and to reaffirm the DUAL importance of academic research and graduate education: The research itself is important, and its role as a vehicle for training the next generation of scientists and engineers is equally important. No matter how we reorganize our academic research institutions, the nation has great stake in our continued success in both areas.

REFERENCES

[1]Government-University-Industry Research Roundtable, *Science and Technology in the Academic Enterprise: Status, Trends, and Issues*, Washington, D.C., National Academy Press, October 1989.

[2]National Research Council, *Summary Report 1990: Doctorate Recipients from U.S. Universities*, National Academy Press, 1991. ■

Concurrent Sessions 6

Wednesday, December 4, 1991, 3:45 p.m.

PROFESSIONAL VALUES AND ETHICAL ISSUES IN THE GRADUATE EDUCATION OF SCIENTISTS & ENGINEERS: A REPORT ON THE ACADIA INSTITUTE/CGS PROJECT

Presiding: Russell G. Hamilton, *Dean, Graduate Studies & Research, Vanderbilt University*

Speaker: Judith Swayze, *President, The Acadia Institute*

Panel: Elizabeth Baranger, *Associate Provost for Graduate Studies, University of Pittsburgh*

Gary Judd, *Dean, Graduate School, Rensselaer Polytechnic Institute*

Luis M. Proenza, *Vice Chancellor of Research/Dean, Graduate School, University of Alaska, Fairbanks*

Elizabeth Baranger

The Acadia Institute is doing all of higher education a service in conducting this careful and sound study of professional values and ethical issues in the graduate education of scientists and engineers, and I am very pleased to be part of the panel convened to comment on Judith Swayze's paper describing this study.

The surveys and interviews they have conducted show clearly that graduate students want more knowledge about ethical standards and issues in their fields and about how to deal with those issues when they arise. Furthermore, the paper states that most faculty and students recognize that relying on an osmosis-like diffusion of values and ethical standards from mentor or research advisor/trainer to trainee can be problematic for a number of reasons. How can this be changed? The paper suggests that there are several routes institutions could take to meet this need. I would like to describe a process that we at the University of Pittsburgh are undertaking to meet some of the stated goals and their short-comings, and then discuss limitations in light of Dr. Swayze's paper.

We have been under scrutiny by federal agencies because of some very notorious research misconduct cases which have occurred at the University of Pittsburgh and other institutions. In response, we adopted a University Research Integrity Policy in 1989, with procedures to deal with allegations of research misconduct. In addition, however, our former President appointed a Research Integrity Officer and initiated a Research Integrity Education program. My colleague Wilfried Daehnick, Associate Provost for Research, was assigned the responsibility for implementing this program.

The question of research integrity education was first discussed with the deans. Their reaction was that they did indeed offer courses in ethics: the Dean of Engineering has in place ethics for engineers, the School of Medicine has a superb program in medical ethics for its MD students and residents, and the School of Library and Information science offers a series featuring invited lecturers on information ethics. But none of these dealt with research integrity. There were only a few instructional programs dealing with these issues, which were present because of the NIH training grant requirements.

Last May we officially launched our Research Integrity Education program by requiring all academic administrators down to and including chairs to attend a workshop lasting one and a half hours. All chairs came, including those in the humanities. Each attendee was given a packet of informational material and a listing of other available resources. After attending the workshop, each chair (or dean, in smaller schools) was to submit plans outlining how their unit would engage in research integrity education, not only for students, but also for faculty and technicians.

The workshops dealt with research integrity, not with broader questions of research ethics, and included three main topics: data collection, publication practices, and supervision. Problems with how data is collected, recorded and stored, and the lack of a complete set of reliable data lie at the heart of many research misconduct cases. The Arcadia Institute questionnaire recognizes this and in addressing ethical issues, asks if the respondent has observed or had other direct evidence of falsifying or "cooking" research data. The data collection speaker at our workshop discussed what form the data should take, how it is recorded, how stored, who owns it. The speaker discussed the analysis of data and pointed out that the most egregious form of fraud in his opinion arose from trimming data (publishing only that which supports the hypothesis) and publication of partial sets of data.

The Acadia Institute questionnaire identifies as ethical issues plagarizing, inappropriately assigning authorship credit, failing to present data that contradict one's previous research. Our speaker on publications discussed such issues as when should a researcher's name go on the paper, inadequate credit to others and inadequate citation, and gave examples of plagiarism, for instance, plagiarism by referees of papers or research grants.

The third speaker (myself) spoke on supervision and how the lack of good supervisory practices can mean both that fraud is undetected and that students and junior faculty are not well trained. While we can hope to increase ethical sensitivity and good practices through formal course work or workshops, it is in the laboratory or in the office of the supervisor that almost all of the training in research and the ethics and integrity of research takes place.

I cite a few examples from the field of experimental physics. One of my colleagues said that he has a great deal of trouble convincing one of his students that data should be retained even if it does not agree with the theoretical prediction. In spite of many talks, he is never completely sure whether or not this is still occurring. Another said that is spite of much

discussion, one of his students continued to correct calculations with white-out when she realized what they should have been. He finally drew a line in her notebook and said that if he saw any white-out after that line, she was out of his lab. Another points out how hard it is to keep track of what students are doing when major changes in computerized data can be made with a flick of several keys. And just recently another said that it was a challenge to train even good students in data collection techniques because in the beginning, when they were not very adept, their results were awful and they knew it and they concluded that everyone's work was unreliable. The trick was to keep them going, but still encourage them to be critical of their and other's work.

All of these are examples of supervisors teaching students proper ways to collect data, and while a research methodology course can help, in the end, most of the training is in this one to one mode. So we urged the departments to improve supervision, to discuss good supervisory practices with faculty at orientations for new faculty. I prepared a one page list, which is attached, called "Research Supervision Issues" with some questions which might effect research integrity, such as the number of persons one faculty member can supervise effectively; how often should a supervisor meet with the person being supervised; does the supervisor review primary data; are there general departmental policies on co-authorship publication practices. I also included some other issues which are causing problems to graduate students, such as what is the obligation of a supervisor toward advisees during a sabbatical year; during the summer; what is the process by which an advisee and a supervisor terminate the relationship. We asked departments to consider ways to discuss these topics in their research integrity educational programs.

What did we get back from the departments? Some have done good jobs of thinking about our issues. However, the following seemed lacking. At the moment, most of the education is in special sessions rather than being integrated into existing courses or events, and I fear that these will disappear in time. Discussion of good data practices, treatment of human subjects, other nitty gritty issues are in all the plans; improved supervision is discussed, but will it be implemented? The responses show the difficulty we have in discussing issues which involve human interactions as opposed to more practical issues.

I have only some indirect feedback on students' reactions. The discussion in one school on authorship and data collection was very lively and there was no need for a speaker because everyone wanted to talk. Our research integrity officer, after making a presentation at another school, was shocked at the enormous pressure to produce data which the students expressed. The fear is that such pressure leads to fraud.

I want to make a final comment on the paper. I found interesting distinctions between professional values and ethical issues. Ethical issues are what our education program focused on, but how can professional values be introduced through an education program? I do empathize with the faculty members Dr. Swayze described who, with puzzled eye expressions, body

language and comments such as "that's a really hard question," show their discomfiture with the question of what are their professional values. In the questionnaire given to graduate students, a list of statements about the behavior of scientists is given, and students are asked to state whether they personally feel it should represent behavior of scientists and whether or not it actually does represent the typical behavior of faculty in their department. Such things as: scientists openly share new findings with all colleagues; scientists are motivated by the desire for knowledge and discovery and not by the possibility of personal gain; scientists place equal emphasis on replicating and verifying others' results and generating new research results. I think that such examples would assist scientists in understanding the question of what are professional values. It may indeed be possible to discuss such issues only in the context of a course or series of lectures on the history or philosophy of science so that one examines others' values or discusses values in the abstract rather than expecting scientists to lead an open-ended discussion of their own professional values.

Improving Research Supervision

Good research supervision lies at the heart of good doctoral education. While disciplines may vary, guidelines can be formulated by a program to guide junior faculty into unknown territory and to establish normal practices which graduate students can expect to see honored. The following is a list of questions regarding research supervision which might be discussed in an orientation session with new faculty or might be addressed in guidelines. Clearly every issue is not equally relevant to all disciplines.

1. The maximum number of people one faculty member can supervise effectively depends on the type of research being done, as well as personal characteristics of the people involved. For your field, what is the maximum number of advisees the typical faculty member should supervise and still be able to provide a good research experience?
2. Approximately how often should a supervisor meet with the person he or she is supervising? How does this vary according to the experience of the person being supervised?
3. Regular collegial discussions among all members of a research group serve many educational purposes. They lead to openness of communication among the group members and peer review of all members. Should supervisors in your unit be responsible for organizing regularly scheduled group meetings?
4. A research supervisor should involve advisees in activities that provide meaningful educational or training experiences, and which, as much as possible, are related to the advisee's research project. How can this be monitored? An advisee's research topic should be focused and of such a complexity that it can be completed within a defined time frame. How can supervisors achieve this?
5. Supervision of the design of the scholarly research and the process of

acquiring, recording, examining, interpreting and storing scholarly data is necessary. A supervisor should review primary data and not rely on summary data, graphs or discussion. How can this be encouraged?

6. Drafts of material an advisee submits should be critiqued promptly. How prompt is "promptly"?
7. Are there general departmental policies on coauthorship publication practices or is it the supervisor's responsibility to formulate such policies?
8. What is the obligation of a supervisor toward advisees during a sabbatical year? What are the obligations of supervisors during the summer, if they are not employed at the university during the summer?
9. What is the process by which an advisee and supervisor are joined together? How is this made known to people in your department?
10. How should supervisors assess the progress of advisees and give a realistic appraisal of their performance?
11. What is the process by which an advisee and a supervisor terminate the relationship? How is this policy made known to people in your department? ■

Gary Judd

I appreciate the opportunity to review and comment upon the observations and preliminary conclusions in the Acadia Institute/CGS Project and thank Dr. Swazey for sharing a Work-in-Progress Report on Student Data with the panel members in preparation for this session. How timely is the topic of ethics and values instruction on our campuses! One cannot open an issue of *Science* or read the Scholarship section of *The Chronicle of Higher Education* without confronting an ethics or values article. Last week's headline in the scholarship section was, "New Definition of Misconduct in Biomedical Research Proposed; U.S. Advised to Monitor Blatant Fraud." The November 15 issue of *Science* had a two-article special section dealing with the Gallo controversy regarding the first to identify the virus responsible for causing AIDS. In our conference, in addition to this session there was a pre-meeting workshop entitled, "Issues of Research Misconduct and Plagiarism" and a session is to be held tomorrow with papers being presented on academic integrity and misconduct. While the focus of the Acadia Institute/CGS Project deals with ethics and values in the sciences and engineering, we need to realize that the questioning of our practices in scientific and technological fields is but a part of the questioning of the ethics, values and practices of academe as a whole. In fact, the data are better understood in the broader context of attitudes and values brought to science and technology by different constituencies in society in addition to those of the field itself. A recent article in the *New York Times Education Life Supplement* on November 3, 1991, stated "Academia Fails the Ethics Test" and not all of the issues discussed were associated with science and technology. However much did relate directly to, or was a result of the research enterprise.

We know that the issue is a very real one needing to be confronted and yet confronting it, as the data presented earlier show, has neither been effective nor even a planned part of our educational curricula. Can we achieve better insight as to why more U.S. than international and more men than women graduate students thought that there was effective handling of ethics and values within their department? As pointed out earlier by Dr. Swazey, the data are still in the preliminary phase of analysis. Generalizations are risky even at the end of a study, and certainly in the middle of one. But having made that disclaimer, doesn't the similarity of the ethics and values opinion to those on other issues, such as diversity, access and parity in the workplace which are indeed thought of by many also to be issues of ethics and values, argue that one needs to explore whether the opinion of the particular constituency is influenced by their perception of how "ethical" the field is, independent of what actually is taught or required. Similarly are the attitudes or expectations of the international students regarding values and ethics sufficiently different from the U.S. students so that they too would respond to a question of values education from a different position? I believe that this would be a fruitful avenue for additional research and also one which assists in identifying early indicators of changing practice.

I found the results from the civil engineering students in the survey of particular interest, not because I am an engineer, but because I would not have predicted that of the four fields surveyed, the civil engineering students would have given their own departments the highest scores for dealing with ethical issues and their faculty the highest rating for caring about teaching. After some thought and discussion of this result with colleagues, I am willing to propose a possible reason for the students' impressions. In engineering there is frequent, visible and substantive discussion of component or system failure as part of the pedagogy. In that discussion, an implicit, if not explicit, consistent message is that the role of the good engineer is to study, understand and prevent such failures. Needless to say, the more spectacular the failure, the more the point is driven home. Be it a bridge, overhead walkway, elevator cable or aircraft structure, faculty and student alike have a shared value that the failure was tragic and that it is the engineer's professional responsibility not to duplicate the error or to contribute in any way to the failure of an engineering project. That lives could be lost and that it could be caused by a design or calculation he/she made is perhaps every engineer's worst nightmare. In that context, it is understandable that the engineer would comprehend why the data, the testing, and anything else relating to the engineered product had to be real, reproducible and verifiable and why he or she would credit that understanding at least in part to the education offered by the department. After all, if failure could happen from honest error, it would certainly occur from fabricated or falsified testing. In a sense, the study of failure and the commitment to its prevention is a surrogate for the values and ethics instruction.

The survey of CGS Deans indicated that in only 7% of the universities was there a formal expectation that departments would commit instructional time in their graduate programs to ethical issues. In fact, 43% felt that dealing with the subject was totally in the domain of the department. The remaining universities have an informal expectation that this topic will be covered. The data thus show an overwhelming dependence on informal and decentralized actions to address issues of ethics and values. While this is consistent with academic tradition, essentially it means that the mentorship model must be looked to as the first line of instruction for ethics and values, much as it has been since the doctoral research program paradigm was instituted. In that paradigm, the exchange between adviser and advisee on what constitutes good data, how necessary it is to place in the literature accurate and complete descriptions of the experimental procedure and data to allow others to verify thesis results, and the pride associated with authoring a paper with one's adviser are typical experiences by many who completed doctoral programs in the past. Many doctoral students today are fortunate to experience the same level of involvement with their advisers. However academic research has become a far more complex enterprise, with funding, funding sources and renewals taking on in some cases, a larger than desirable portion of the adviser's attention and effort. In that mode of operation the transfer of values "can be problematic" as noted in the work-in-progress report. The wrong set of values may be transmitted inadvertently or learned by the doctoral student as the student observes the adviser's preoccupation with the funding as opposed to the research itself. To quote from the Swazey and Anderson report, "... that faculty spend increasing amounts of their time engaged in funding and administrative tasks, and less in the lab or other settings where they can directly interact with their graduate students." Again the analogy to behavior outside the sciences is striking. Very similar statements are made to rationalize the changes in mores of the younger generations in society. To emphasize that point, one could just change a few words in the quote while leaving the sentence structure unchanged. The word faculty is replaced by parents, lab by home and graduate students by children. For the most part, society relies on an informal, decentralized approach to inculcate ethics and values and it too is frequently less than satisfied by the results. The nuclear family and the academic family are experiencing similar problems and perhaps for the same reasons.

Faculty, graduate deans and institutions have started to take steps to deal with these ethics and values concerns. There are growing numbers of policy areas that had previously been left to one's individual judgement which are now spelled out in great detail. Intellectual property, conflict of interest and commitment, consulting practices and academic dishonesty review procedures are among the policies now in place at many universities. While the introduction of policy is not a substitute for instruction, the presence of policies coupled with all the attention that is now being given to issues of ethics and values have caused a reawakening of interest in these issues in every major

research group. Whether the professor's motivation is based solely on a moral commitment or whether it is concern that the next scandal not occur in his/her research group, increasingly attention to the values and ethics of performing research are being discussed. Seminars and campus publications feature values and ethics related topics in greater frequency. There is a second growing trend which I predict will also have a beneficial effect on the ethics and value education of graduate students and how they perceive the ethical standard of their own departments and universities. The recent decisions on the part of many institutions to renewed commitment to undergraduate teaching will yield a more balanced academic environment. From the graduate students' position, this focus should have the effect of making the institution perceived as a more ethical place. In such institutions, not only will the responses to questions on the value assigned to teaching and to any of the value and ethics attitude questions improve but it is likely that the lesson of value and ethics will be better communicated thereby to the graduate students.

It is my position that the opinions gathered in this study will turn out to reflect a point in time in which the actual and perceived effort devoted toward educating science and engineering graduate students in ethics and values was at a minimum. We may not all agree with the reasons or the methods behind the improvements to come. However, one can sense that the direction has changed and that the changing message will bring with it an enhanced awareness of ethics and values in academe in general and for science and engineering graduate students specifically. ■

Plenary Session III

Thursday, December 5, 1991, 9:00 a.m.

AMERICAN MINORITIES AND INTERNATIONAL STUDENTS: STRIKING THE BALANCE?

Presiding: Hector Garza, *Associate Dean, Graduate School, Eastern Michigan University*

Speakers: Frank L. Morris, Sr., *Dean, Graduate Studies, Morgan State University*

Claudia Mitchell-Kernan, *Vice Chancellor for Graduate Programs/Dean, Graduate Division, University of California, Los Angeles*

Mary Paterson, *Senior Director for Planning & Development, NAFSA: The Association of International Educators*

Peter Syverson, *CGS Director of Information Services*

American Minorities and International Students: Striking What Balance? American University Preferences for International Students Over American Minorities, Especially African American Males

Frank L. Morris

1. While President Bush and Education Secretary Alexander have focused upon race influenced minority (undergraduate) scholarships and have reversed the efforts of the Middle States Accrediting Association to consider university diversity in the accrediting decisions, they have conveniently ignored the much greater American university subsidies to international students who are not American citizens while at the same time requiring that a high proportion of African American, Hispanic and Native Americans who received doctorates pay for their doctoral education primarily by going into debt.

2. American universities use discretionary funds that they receive from the federal government through subsidized research funding and they disproportionately give these funds to international students through research assistantships. These are the most desirable types of university support because it often permits working closely with faculty, getting joint publications and often having this joint research being the basis for the dissertation. This probably helps explain why minorities take longer to receive their degrees.

3. While American universities were giving doctoral funding preferences to international students over American minorities, they produced many more foreign student doctorates than American minorities in some of the most critical scientific fields of the future including mathematics, engineering and the life sciences. In some of these critical fields not a single African American doctorate was produced by American universities while they produced many

subsidized non American citizens. This is a major step toward future continued second class citizenship for African Americans.

4. While there were great increases in international student doctorates since 1975 (more than 60%) and a doubling of doctorates for Hispanics, Asian Americans and even Native Americans, African Americans were the only group to experience a decline in spite of a 40% increase in doctorates going to African American women. The reason was a more than 50% doctoral drop since 1975 in doctorates to African American males from American universities.

5. The organizations which represent American universities supported changes in the 1990 immigration laws which made it even easier for more international students to come to American universities. They also supported changes to make it easier to recruit international faculty for future positions. This is consistent with the clear pattern of American universities and faculties valuing international students and faculty over American minorities, especially African American males.

6. In **every** field of doctoral and other professional study, American universities provide better funding to the international students who received doctorates over African Americans and often over other American minorities even in fields where there were a greater supply of American minority students who received doctorates. These fields included education, the humanities and the social sciences. There is no way international students should receive preferences over American minorities in these fields.

7. The funding issue is critical for American minorities, especially African Americans, pursuing advanced degrees because American minorities come from families with lower than average income and especially wealth than non minority Americans. They also have accumulated more undergraduate debt than non minority Americans. Thus the decision of American universities to give preference to non American citizens over American minorities is especially cruel.

8. American university graduate departments, especially graduate departments in the sciences, do not extensively recruit and fund American minority doctoral students where they are the most likely to be found specifically at the Historically Black Colleges and Universities and the large urban public comprehensive universities.

9. Some nations are deliberately over producing graduates in some scientific fields with the expectation that their surplus will be given American university access and positions over American minorities.

10. American universities are similar to the rest of American society and they continue to value non American citizens over American minorities especially African American males. As racial tensions have increased on campuses, African American males are seen as threatening. Yet ironically the most violent incident on American campuses last year involved a subsidized non American citizen in the sciences from the University of Iowa.

11. American graduate deans have not really challenged their doctoral departments on the preferences they give to international students over American minorities.

12. The university funding does not include state support of lower tuition and capital investments for public universities or the indirect tax subsidies to private universities through federal tax deductions for endowment and capital campaigns. African Americans and other American minorities are paying American taxes when American universities directly and indirectly use subsidized funds to primarily support international doctoral students and not American minorities.

13. The data in this discussion refer to people who have actually received their doctorates so there is no question of being qualified to do doctoral work.

14. The data in this discussion come from the doctoral research project of the National Academy of Sciences.

American Minorities and International Students: Striking What Balance?

During the past year President Bush and Secretary of Education Alexander have been concerned first, that scholarships based upon race were an unconstitutional advantage for African Americans. This was in spite of the fact that such scholarships had not been successfully challenged in the courts. Secretary Alexander also successfully carried out a campaign against the Middle States Accrediting Association to be sure that they would never fail to accredit a college or university regardless of what the institution did on the issue of diversity. While our highest federal education officials were concentrating on these racial higher education issues, they conveniently ignored a larger issue that will have even greater consequences for our nation in the future. That issue is the clear preferences American universities continue to give to non American citizens over American minorities and especially over African American males in access to doctorates from American universities, especially doctorates in both present and future critical scientific fields. Vernon Jordan, the former President of the national Urban League stated our American national issue most clearly . . .

> Today America finds itself at a unique moment in history. We stand as the world's foremost economic power. Despite all the stories of decline, we produce more than Japan, consume more than Europe, and remain the most productive richest nation in the world. Yet maintaining economic preeminence in this changing world will depend upon America's capacity for renewal and upon our ability to finally come to terms with the racial problems that have plagued us throughout our history.[1]

Vernon Jordan's plea and any objective evaluation of American national interest should tell us that it makes great sense to develop and exploit the talent and brain power of all Americans including all American minorities. Yet throughout American history that interest has never prevented or outweighed the detours around our national interests caused by irrational fears and racial bias. This will become apparent when we examine what has happened to African American males, especially in comparison to international students, in attaining doctoral degrees from American universities since 1975. It should not be unreasonable to expect for enlightened American universities to at least give American Blacks, including Black American males, opportunities comparable to the opportunities provided to international students.

The dearth of US born and raised African Americans receiving doctorates in the sciences is generally known to be bleak. It might be beneficial to examine just how bleak. You can get this data (by special request) from the Doctoral Research annual survey of U.S. doctoral recipients from the Office of Scientific and Engineering Personnel of the National Research Council of the National Academy of Sciences. In their annual survey they do not break down US born African Americans from other naturalized Americans of color.

In 1990 all American universities produced only 4 US born and raised African Americans (and 5 Puerto Ricans and Mexican Americans) who received doctoral degrees in math compared to 413 non American citizens. In computer science the numbers were 2 African Americans and 2 Puerto Ricans and Mexican Americans compared to 263 non American citizens; there were only 4 US African Americans and 4 Puerto Rican and no Mexican American Ph.Ds in Physics and Astronomy compared to 511 non American citizen Ph.Ds in those fields; In Earth Atmospheric and Marine Sciences, nationwide there were 2 US African Americans, 5 Puerto Ricans and 3 Mexican Americans compared to 171 non American citizens who received doctorates. Finally let's look at the larger fields of chemistry, engineering and the life sciences. In chemistry 12 US African Americans, 19 Puerto Ricans and 11 Mexican Americans received Ph.Ds compared to 510 non US citizens; in engineering 28 US African Americans, 6 Puerto Ricans and 13 Mexican Americans received Ph.Ds compared to 2191 non US citizens; in the life sciences 63 US African Americans, 35 Puerto Ricans and 36 Mexican Americans received degrees compared to 1463 non American citizens who received degrees from American Universities in these fields.

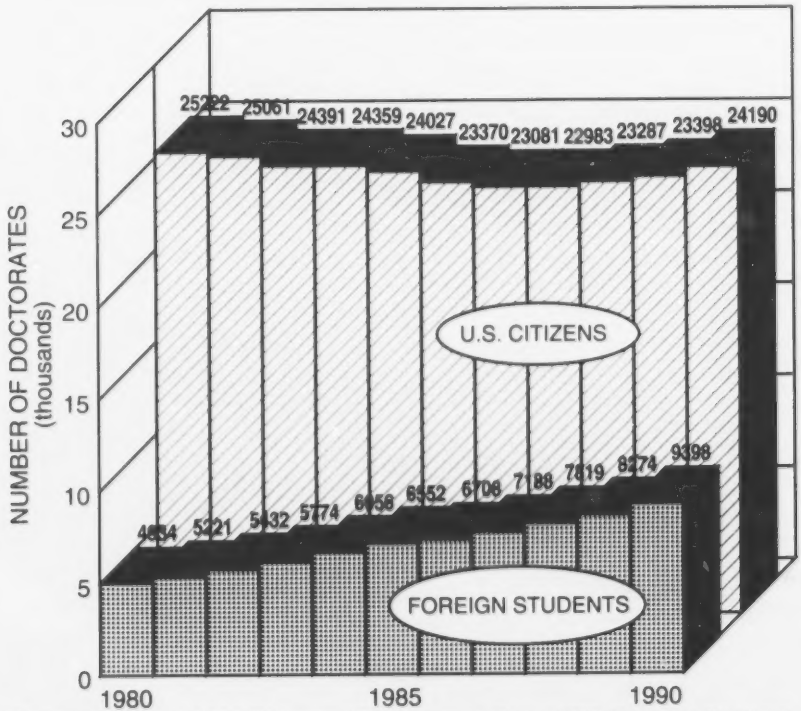
What is more shocking is the wide number of important scientific fields where American universities produced not a single US African American Ph.D. in 1990. *What follows are* ***some*** *of those key scientific fields with the number of non American citizen Ph.Ds produced by American universities in parentheses.*

There were **no US produced African American** Ph.Ds in applied math (86), algebra (15), number theory (11), topology (16), operations research (16), other and general math (105), astronomy (12), acoustics (8), atomic and molecular physics (25), elementary particles (63), nuclear (24), optics (28),

plasma (13), analytical chemistry (51), agricultural and food chemistry, geology (21), geophysics and seismology (29), oceanography (33), civil engineering (258), engineering mechanics (60), industrial engineering (77) materials science (146), nuclear engineering (36), petroleum engineering (24), systems engineering (21), biophysics (37), ecology (19), molecular biology (85), microbiology and bacteriology (77), neurosciences (27), etc. These data come from pages 61–67 of a special study of the doctoral project with the data about non American citizens coming from their annual report in 1990.

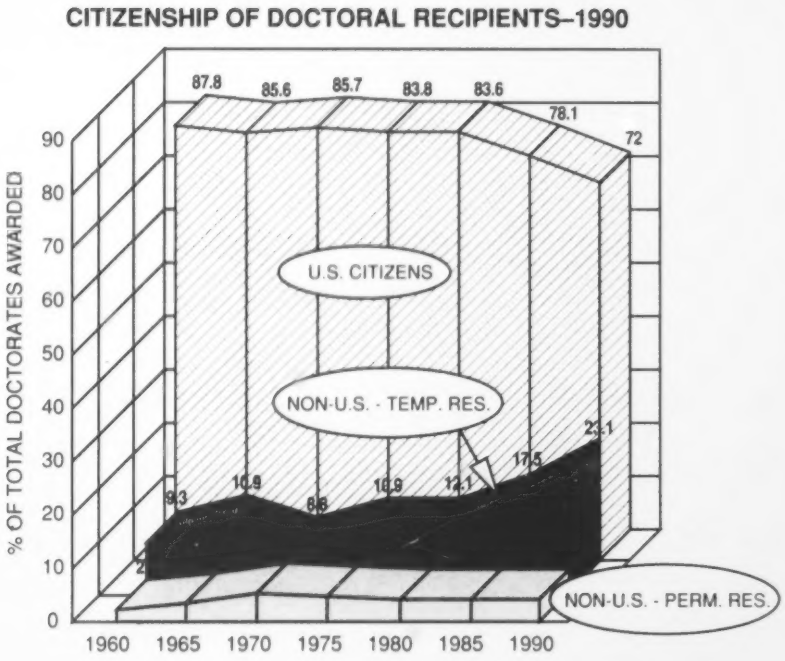
The above data is shocking. We are not even close to a balance between the commitment of American universities to US African Americans compared to international students. Note that in 1990 no US university produced an American Black Ph.D in agricultural and food chemistry in spite of the fact that one of the greatest American scientists who ever lived in the field was a poor US born and bred African American.

TABLE 1
DOCTORATES AWARDED BY U.S. UNIVERSITIES



Thurgood. D.H., and J.M. Weinman. 1991. *Summary Report 1990: Doctorate Recipients from United States Universities.* Washington, D.C. National Advisory Press. Table prepared by Office of Institutional Planning and Evaluation, Morgan State University.

TABLE 2



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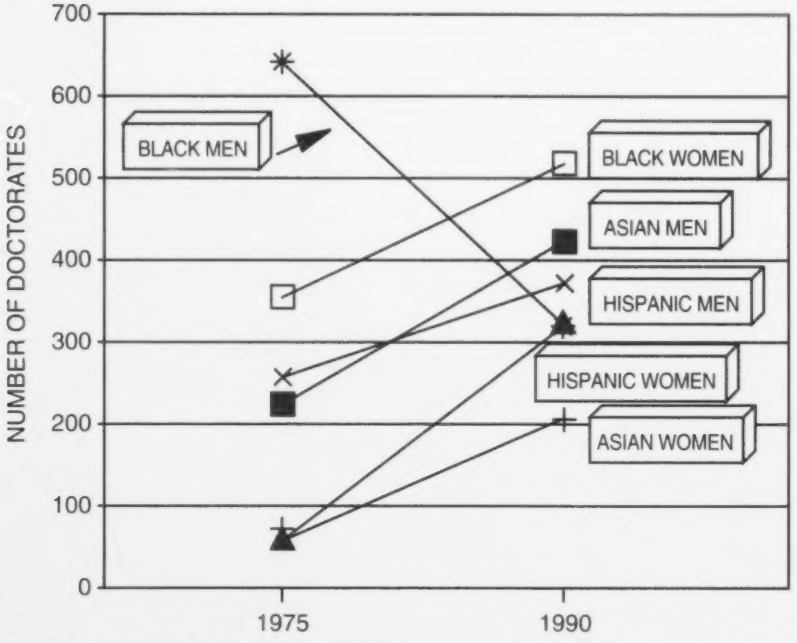
Let's look at a comparison between African Americans and International students in the allocation of doctoral degrees earned in American Universities from 1975 until 1990, the last year where complete figures are available. During this time frame the number of non US citizens receiving doctorates increased from 5,870 in 1975 to 9,398 in 1990. This 60% increase in absolute numbers represented an increase in non US citizen doctorates as a percent of all doctorates from 18% in 1975 to 28% in 1990.[2]

During this time frame, even though there was an overall more than 10% decline in American citizen doctorates, Asian, Hispanic and even Native American doctorates more than doubled in absolute numbers. White women doctorates increased 45% and even Black women doctorates increased more than 40%. Even a one third decline in White male doctorate recipients still left

FIGURE 1
DOCTORATES AWARDED BY U.S. UNIVERSITIES TO U.S. CITIZENS



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white males over represented in receiving doctorates compared to their proportion of the American population. The group which suffered the greatest decline during this period was Black males. **Black American male doctorates declined from 650 in 1975 to 320 in 1990 a decline of more than 50%.**[3]

The statistics are clear. They demonstrate that doctorate degrees for Black males declined more than 50% once the federal government began to cut back on direct assistance. Once American Black doctoral students had to depend upon American universities as the prime source of funding to finance their studies they became much worse off because American universities have chosen to allocate more of their resources to fields where they have admitted and supported foreign students. *Ironically much of this university administered support for international students is in the form of research assistantships which*

permits them to use federal funds from direct or indirectly funded research to discretionary disproportionately fund international students not American minorities.

If there were not a ready availability of foreign students, American universities would have greater incentives to help develop and increase the supply of American students, even possibly American minority students in many science fields. Instead, American university departments and the One DuPont Circle organizations that primarily speak for American education, unanimously supported provisions of changes in the immigration laws of 1990 which will accelerate the recruitment of international scientists and scholars and thus insure that American minorities will continue to be shut out of these academic openings in the future. These are serious charges. Now let's examine some of the evidence.

American university departments do not attribute the dearth of American Black doctoral students to the lack of financial aid. Yet a lot of evidence suggests otherwise. Michael Nettles in his excellent study commissioned by the GRE concluded that the reduction in (federal) financial assistance has had a negative effect on prospective American Black graduate students at both the masters and the doctoral levels. It also may help to explain why more than 60% of both American Black and Hispanic graduate students attend graduate school part time.[4] As Nettles puts it . . .

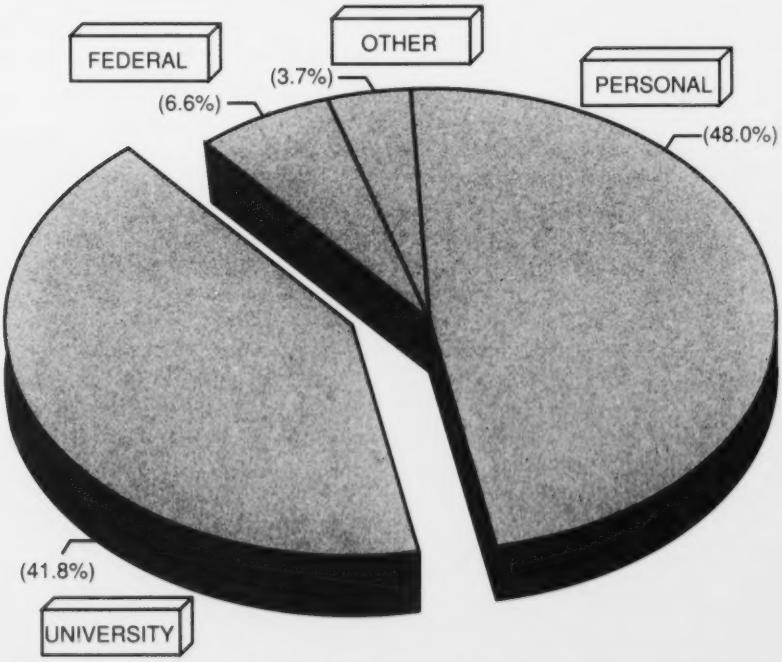
> Not surprisingly, the period of greatest available financial aid was in the late 1960s and early 1970s. In 1970, for example, twice the number of students received fellowships, scholarships and traineeships as in 1981. During the period from 1970 to 1981, the federal budget for these forms of assistance declined by more than half. The decline has continued. At the same time that grants decreased, student loans increased, going from 717 million in 1976 to nearly 3.5 billion in 1984.[5]

Nettles noted that as federal direct student funding declined students became more dependent upon universities for assistance. He stated that this shift would have profound effects upon the ability of Black students to afford graduate school. That statement by Nettles may have been the understatement of the year. As universities have become the prime determining financing factor for doctoral degrees African American males have fared much worse than anybody else, especially in comparison to international students.

The annual NRC doctoral research project has tracked how those who were successful in achieving the doctorates financed their education. The latest (1990) data is informative. For international students, American Universities were the primary source of doctoral support for 68.8% while for African Americans Universities were the primary source of support for less than 25%.[6] For more than 60% of African American (and Native Americans) the primary source of support for their doctoral education was their own personal funds such as loans. In contrast, only 13.8% of international students primarily depended on personal funds to finance their doctoral education.

TABLE 3

PRIMARY SOURCES OF SUPPORT FOR 1990 DOCTORAL RECIPIENTS ALL U.S. CITIZENS



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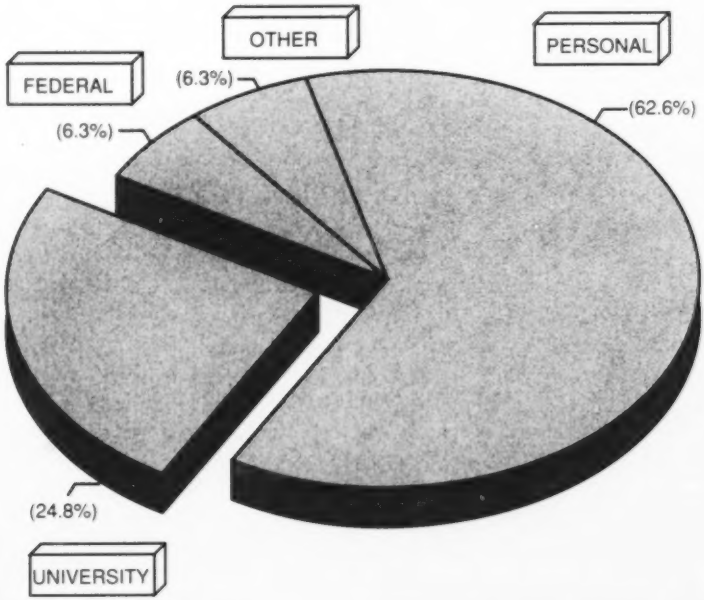
American universities and the doctoral research project of the NRC try to explain away the above by contending that minorities including African American males are in fields that less university and federal support is available. That is a partial explanation. Yet it does not explain why Hispanics and Native Americans and even Black women who get doctorates in similar fields as Black males were almost able to double their doctoral production between 1975 and 1990. It does not also explain why American university departments did not recruit more minorities in fields where they had discretionary financing.

The different fields lie is even more apparent if we compare the fields where a much higher proportion of American minority students than international

TABLE 4

PRIMARY SOURCES OF SUPPORT FOR 1990 DOCTORAL RECIPIENTS AFRICAN-AMERICANS



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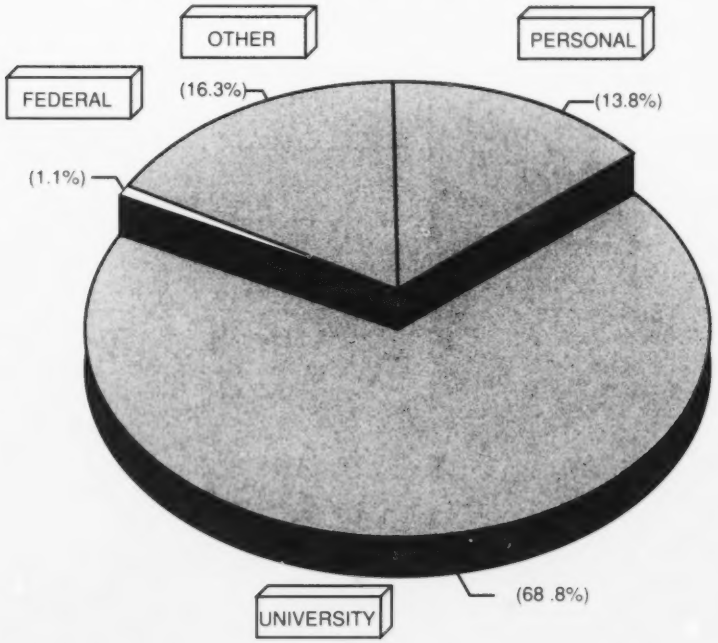
students are found. In education doctorates, where many minorities are found, I found the following. For American Blacks who received their degree in education in 1990, 81% listed personal resources as their prime source of financing for their doctoral studies and only 12% were primarily funded by American universities. In contrast, international students who received doctorates in education that year only 41% listed personal resources as their primary source of funding and more than 28% were primarily funded by American universities. Keep in mind that the absolute number of international students is many times greater than African Americans or all American minorities combined so a large positive funding percentage in favor of international students translates into almost geometric differences in actual funding differences.

TABLE 5

PRIMARY SOURCES OF SUPPORT FOR 1990 DOCTORAL RECIPIENTS FOREIGN STUDENTS-TEMPORARY RESIDENTS



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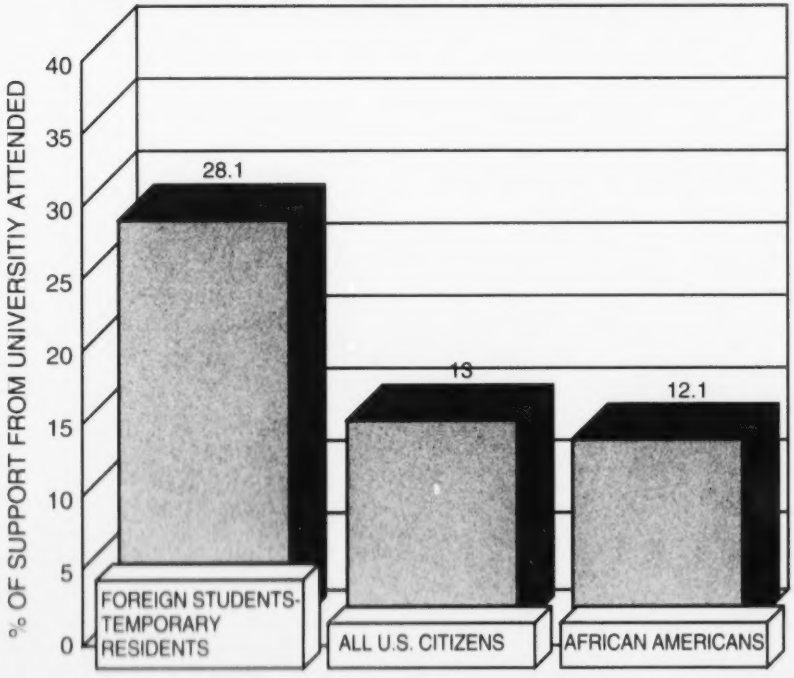
Thus if we just look in the doctoral field where about one half of all African Americans achieve their doctorates, twice the proportion of American Blacks as non American citizens had to personally finance their doctoral educations. Equally important **American universities were more than twice as likely to provide funds to international students in education as American Blacks.**[7]

We find similar patterns in fields such as the social sciences and the humanities. In the social sciences, almost half (48.5) 1990 American Black Ph.Ds financed their education by personal funds while only (22.5%) of international students had to pay for their education with personal funds. American universities were the prime source of financing for 37% of

TABLE 6

PERCENTAGE OF SUPPORT FROM UNIVERSITIES 1990 DOCTORAL RECIPIENTS IN EDUCATION



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American Black Ph.Ds while universities were the prime source of funding for 56% of international student Ph.Ds.[8]

It is difficult to understand why American universities should favor non American citizens in the humanities but they do. Only 28% of international doctoral students in the humanities primarily used personal funds to finance their doctoral studies compared to 50% of American Black doctoral students. Universities were the primary source of support for almost 57% of international students in 1990 compared to only 50% of American Black doctoral students. Remember these figures are for those who successfully completed their doctorates!

The difference of fields justification should be finally put to rest because (university) support for American Black male doctoral education declined as American Black doctorates increased in the breadth of fields. In spite of an overall decline, American Black doctorates in engineering, life sciences, social sciences and in professional fields increased and the percentage in education decreased. Education doctorates as a percentage of all American Black doctorates declined from almost 61% in 1975 to a little more than 50% in 1990.

It is important to also point out that while American universities were giving preferential doctoral financing to international doctoral students over American doctoral students in education, African American and Hispanic doctoral awardees in education were accumulating significant graduate debt to go with high undergraduate debt. One third of all Hispanic doctoral awardees and more than one quarter of the American Black awardees reported debt of more than $10,000 thanks in part to the preferences of university deans and graduate schools[9]. Keep in mind that this high debt is in a field where the salaries are lower than in the sciences.

There are other indicators which show a preference or bias of American university graduate departments toward international students over American minorities especially in comparison with American Blacks and Native Americans. In both real and total time to complete the degree international students appear to have the advantage over American Blacks and Hispanics. In education for example, the median total time for non citizen international students was 12.8 years compared to 19.6 years for American Blacks and 16.4 years for Hispanics. The real time median differentials were 6.1 years for international students in education compared to 8.5 years for both American Black and Hispanic doctoral degree recipients.[10] Part of this difference could be related to the preference of international students for university support for research assistantships. Research assistantships encourage interaction with faculty, promote the possibility of both mentoring and possibly provide a basis for a dissertation.

In spite of the above, American universities contend that factors other than their differential allocation of financial aid account for the dearth of minorities in graduate education. This is in spite of the fact that Nettles and others pointed out years ago that the much lower median family income and the extreme difference in black and white family wealth in the US requires that minority students especially American Blacks, non Cuban Hispanics and Native Americans, assume much greater undergraduate debt burdens than White American graduate students. Nettles strongly suggests that this differential debt burden affect minority and majority students differently when they make education and career decisions.[11] It is an entirely rational decision not to go on to doctoral degree programs when you see that the majority of your peers who do are not favored in comparison with international students and students of your race are forced to take longer to complete your degrees?

Another contention of American universities is that there is a "pipeline" problem which keeps them from finding "qualified" American black graduate students. This contention seems to have less merit on its face after we have examined the American university funding preferences for international students mentioned above. Yet the NRC report notes that such "qualified" potentially successful American Black graduate students are disproportionately located on the campuses of historically Black colleges and universities. Although such colleges and universities enroll only about 16% of all Black students in American higher education, they were the baccalaureate-granting school for almost 60% of the American Blacks who received their Ph.D degrees in 1975 and almost 40% of the American Blacks who received their Ph.Ds in 1990.[12] I am proud to teach and work on one such campus which produces more Black Ph.Ds than any other public American university according to the latest figures. Yet I do not see American universities actively try to extensively recruit or offer to support our American Black science graduates who have the capability to succeed in doctoral programs. So much for the alleged pipeline problem.

Now let's really see why there is this overwhelming preference in American graduate university departments for international students and especially international Asian students in the sciences. Three countries provided 44% of all non American citizen doctorates in 1990 specifically Korea and the two Chinas.[14] This is consistent with the current Asian American stereotype of the "model minority" who is an insatiable docile and compliant worker.

It is therefore important to record for the record that the One DuPont Circle organizations who represent American universities worked and testified in support of the 1990 immigration law changes to make it much easier for foreign professors and students to get both access to and permanent status in the US. This trend, which clearly works to the detriment of US minorities, is likely to accelerate in the future. In a paper read at last Spring's Northeast Association of Graduate Schools meeting, David Simcox, Executive Director of the Center for Immigration Studies, a Washington DC immigration think tank put it as follows:

> Several things work to increase immigration in the 90s. The most obvious one is rapid population growth in the third world, particularly among the young, highly mobile working age population. Much of the third would is falling behind in the race to create new jobs to match the growth of their labor forces. The labor force of Mexico will grow by about one million a year but Mexico's economy will create less than half that number of new jobs.
>
> The International Labor Organization estimates the labor force to grow in the third world by 50 million per year of which, less than half, can be absorbed in their economies. These economies are also not having success in finding jobs for the increasing number of college graduates they produce.
>
> Indeed we are seeing higher education priorities in some major sending countries such as India, Pakistan, Korea and the Philippines increasingly

determined by the demand for skills and training that are marketable in the west . . . thus India produces more doctors and engineers and the Philippines more nurses each year than their economies can effectively absorb. This further expands the pool of educated candidates for graduate education or faculty positions in US universities.

A greater percentage of foreign students will choose careers in the sciences because those disciplines are viewed as culturally neutral; because US universities are still considered as the best in science and technology; and last but not least, the transition to permanent residence in the US is easiest for those with science skills.[15]

We must be careful not to kid ourselves. How many of you as graduate deans really believe that your university departments in the sciences would really prefer to have more African American males in their departments. This is especially the case in determining whether they are more comfortable with African American males in comparison with any international student or even any other American minority. Dr. Richard Majors, a Harvard trained scholar at the University of Wisconsin, Eau Claire puts it this way in explaining the perceived threat of young Black males.

White people often look at the expressive lifestyles of Black males as threatening, aggressive and intimidating, which is the reason Black boys are suspended more frequently and for longer periods of time, and are more likely to be assigned to remedial courses and classes for the retarded and learning disabled. Also the disproportionate drop out rate or push out rate is due in large part to cultural misinterpretation of these behaviors.[16]

I believe that the irrational fears that impact American Black males at the elementary and secondary level are reflected in increased discomfort levels of the predominantly white American males who control the key access processes which result in the clear preferences of international students over our minority students, especially our African American males.

I am not one to simply point out the problems without the solution of what you as graduate deans can do to change things. That will be the final section of this paper.

What Graduate Deans Can Do

Graduate deans should not deny that there is a need to address such a great imbalance in favor of international students over American minorities in graduate education. International students received 28% of all doctorates given by American Universities in 1990. Note how this compares with African American males. African American males are 7% of the U.S. population. Yet they are 47% of the US prison population, 5% of the top jobs in corporate America but only 3% of the US college population and even worse only less than 1% of those who received doctorates from American universities in 1990. How do we and you justify the American private corporate sector doing much better than our universities? Let's now focus on what can be done.

The first thing a graduate dean should do if you are concerned about the lack of minorities on your campus is to examine and document the extent of the underrepresentation. You should not hesitate to point out to departments how their commitment to international students compares with their commitment to American minorities. Deans should be especially sensitive to categories of minorities such as native Americans, African Americans (especially African American males) and specific Latino sub populations such as Puerto Ricans and Mexican Americans. Your discussion with departments and schools should not only be about minorities and women in general but specifically about the most underrepresented minorities and the reasons for their non presence.

Graduate deans have a responsibility to question department and school practices which give greater preferences to international students rather than to American minorities. We should be especially vigilant in monitoring the dire situation of US born African American males. It may take great powers of persuasion because many American academics may feel more uncomfortable with an increased presence of African Americans (especially African American males) because of the relatively recent past racial tensions of many American university campuses including the Universities of Michigan and Massachusetts and numerous others. Graduate deans should be willing to confront departments and schools whenever the imbalances are as great as those pointed out above.

Graduate deans often have responsibility for or influence over graduate school financial aid. You should explore on your campus to see if there are American minority/international student imbalances and whether the imbalances are the result of conscious or unconscious prejudices or bias. You should be skeptical of and question departments when they rarely select American minorities or specifically African American males for either admission or if admitted, rarely give them research assistantships.

One of the factors that leads to less financial assistance to American minorities is when American universities heavily rely upon standardized tests in the determination of which doctoral students get financial aid. If departments heavily rely upon standardized tests in the allocation of financial aid, you can rest assure that they give a low priority to either diversity or a fair shake for American minorities. The alternative standard could be whether the past records, especially their GPA and recommendations, indicate that the student could be successful in the program. If there are doubts about minority students departments should be willing to interview them.

The best way to recruit American minorities is through faculty contacts. This includes faculty to faculty contacts in departments where a large number of minorities are undergraduates. This often means extensive communications and contacts with Historically Black institutions or departments located in comprehensive universities in large cities. If your departments are not doing this then you should know that they have no intention of diversifying their doctoral students with American minorities.

In upholding standards and providing certification, graduate deans have found that the job most requires that we provide vision, motivate and most important, persuade others to do the right thing. Any student of American history knows that nothing is more difficult than changing American values and actions that involve the issue of race. Unfortunately it seems that nothing is more difficult than changing American values and actions that involve race. Unfortunately it seems that this will be our main American challenge of the 21st century as it has been our main domestic challenge of the 19th and 20th. Good luck!

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[5] *Ibid.* p. 5

[6] The data for these comparisons come from NRC '90, tables 12 and S-7, pages 24 and 47.

[7] *Ibid.*

[8] *Ibid.*

[9] *Ibid.*

[10] *Ibid.* Table 6, page 15; Table S-6, page 46.

[11] Nettles, P. 4.

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[13] *Ibid.* Table 6, Page 15, Table S-6, Page 46.

[14] *Ibid.* Table 4 Page 11.

[15] David Simcox, *Immigration in the 1990s and Graduate Education. Paper given at the annual conference of the Northeast Association of Graduate Schools.*

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FOREIGN AND MINORITY GRADUATE STUDENTS: STRIKING THE BALANCE

Mary Peterson

Let me say at the outset that my purpose in speaking to you will not be to take issue with what Dean Morris has said. Although I might quibble with, or even object strenuously to, some of the figures he has used, that is not the central issue. What is central here is graduate school policy and practice, and that is what I will be focusing on.

First, so that you know where I'm coming from—literally and otherwise—let me say that my organization's mission is to promote effective international educational exchange for the purpose of increasing mutual understanding among nations and fostering cooperative international development. I've been with NAFSA: Association of International Educators for twelve years, and have during that time dealt with a range of issues related to international education on campus, international recruitment, standards and self-regulation. My current job has the interesting combination of ethics and fund-raising. Actually, now that I think of it, that's not a bad combination to bring to this assignment: you see, the one half keeps me honest, while the other keeps me very pragmatic.

Today, my appointed task is to bring an "international perspective" to this difficult dialogue, and I am going to approach that task in a very pragmatic way, for two reasons:

1. While I would love to believe that you are all just as interested in increasing the likelihood of world peace as I am, I don't believe for a minute that very many of you have set out consciously to internationalize graduate education or have fine-tuned your sense of the international dimension of your institution's mission, bringing to it the clarity it would need in order to illuminate the nitty-gritty of day-to-day graduate school decision-making. No, we'd better face the fact that most of you have admitted international students because they were there—often, when no one else was.

2. This topic is politically CHARGED. What we are looking at today is whether a segment of our education system can be charged, as our "education president" is being charged by some, with having more of an international agenda than a domestic one.

What I want to do with my few minutes before you is to *help you take a look at the realities of the presence of international graduate students on our campuses*, starting with a few statistics:

- In 1990, foreign students (i.e., holders of nonimmigrant visas) received 23% of the Ph.D.'s awarded.
- During that same academic year, foreign students represented roughly 20% of the total population of graduate students in the U.S.

Let's disaggregate the "foreign student" population—after all, we're talking about a group that is hardly monolithic. There are 67 different countries that have more than 1,000 students enrolled in our colleges and universities.

- In 1990–91, there were 407,500 foreign students in the U.S. Of these, just

under 183,000 (44.9%) were graduate students (12% were seeking Associate's degrees, 38% Bachelor's and 5% were enrolled in "other" programs).

- Aggregate data collected by the Institute of International Education on sources of support for foreign students indicate that 77% of foreign students' support comes from non-U.S. sources, while 18% comes from U.S. colleges and universities.

The past decade has witnessed major shifts in where foreign students are coming from—and that fact has everything to do with what we are observing in graduate schools today.

- The Middle East: Numbers were running high ten years ago, but now this region accounts for less than 10% of the foreign student population, and only one-third of those are graduate students.
- Africa: Numbers continue to decline, now down to 6.4% of the total population, with roughly 40% being at the graduate level.
- Latin America: Numbers from this region have also continued to decline (though some countries are beginning to rebound), now represents 12% of the population and has the lowest regional proportion of graduates, at 25%.
- North America sends 4.8% of our foreign students, with 37% at the graduate level, and Oceania sends us 1% of our postsecondary foreign students.
- Europe: European numbers have grown a little, and are now up to 12% of the total, with a hefty 41% at the graduate level. Eastern Europe jumped up 42% last year, but still totals only about 4,000 students.
- That leaves Asia—with more than half of all the foreign students (53.8%), and 65% of the foreign graduate students in the U.S. Let's take a slightly more detailed look at Asia's top five countries, as a measure of the diversity within this one "international student" group:

  China is number one in the "top ten" nations sending foreign students, with 39,600 students in this country, 82% of whom are graduate students. What they study: 33% are in physical sciences, 21% engineering, and 13% in math and computer science. That means that ⅔ of the Chinese graduate students—and this amounts to 10% of all foreign graduate students—are enrolled in these three areas.

  Japan, number two overall with 36,610 students in U.S. colleges and universities, has only 20% of its students at the graduate level. Of these, the largest single percentage, 28%, enroll in business. The Japanese, like the Europeans who study here, are enrolled more in the social sciences, humanities, and the arts.

  Taiwan, number three, has 33,530 students here, of whom 72% are at the graduate level. They favor engineering (30%) and math (16%).

  India is number four, with 75% of its 28,860 students at the graduate level. Indians overwhelmingly choose engineering (39.6%) and math/computer science (16%).

  Korea is number five, with 23,360, of whom 68% are graduate students and are remarkably evenly distributed among a wide range of fields.

When we look at foreign enrollments by department, Asians now account for ⅔ of the foreign students in business, and roughly ¾ of those in engineering, math/computer science, and the physical sciences. These are not the fields in which American minority students are clustered. International students tend to enroll in departments where times-to-degree are typically shorter, completion rates are higher, and support is more readily available. Which is the chicken and which is the egg? It would be hard to say.

But let's go back to the issue of balance, and let me pose a question that comes from Dr. LaPidus: *Could it be that we have too few minority students because we have too many international students? Or, put slightly differently, would we have more minority students if we had fewer international students?* Are graduate schools using the presence of foreign students as an excuse not to recruit minority students? My own experience and contacts with educational institutions tell me that that is not the case. Very few dollars are being invested in international student recruitment at the graduate level, while many are being spent in efforts—effective or ineffective—to recruit domestic minorities. As any enrollment manager can tell you, these are two very dissimilar applicant pools.

Are you enrolling too many foreign students? How would you know? Is there such a thing? As a committed internationalist, I would posit that there is such a thing as "too many," whether of a single nationality group or of the international group as a whole. The definition of "too many" would have to do with:

1. the mission of your institution
2. the impacts, i.e., benefits, costs and risks of the presence of foreign students
    - educationally
    - economically
    - culturally, i.e., with respect to the life, the flavor and prestige of your institution

How could an institution, given its unique mission, enroll too many foreign students? Usually, it happens *ad hoc*, perhaps as a "temporary" means to serve a longer-term goal, such as keeping a particular department open between the crests of American students' faddish enrollment waves. Perhaps the goal is to keep open the institution itself. Or it may not be a question of goals at all, simply a set of circumstances where goals and means have slipped out of alignment with each other and with the mission of the institution. In any case, one has to ask whether the educational objectives of the students, foreign or domestic, can be well served if such a situation persists.

You may not be enrolling "too many" in terms of your mission. Your mission may well be to bring in and provide an excellent education for the best and brightest the world has to offer. But if you haven't done so before, now would be an excellent time to take a hard look at your graduate programs, and how you are managing their international dimension.

- Talk to the admissions committee chairs or staff. Are your standards working? Have they slipped? Are faculty reporting pedagogical drag owing to students whose academic or linguistic preparation is not adequate? Are the funds available for support being allocated the way they were intended to be?
- Examine the curriculum in the departments with the highest concentrations of foreign students. Have there been unplanned shifts?

While you're at it, consider the costs of a properly managed international component:

- *advising*: Personal and academic are needed, in addition to advising on immigration regulations.
- *English as a second language and TA training*: The latter goes way beyond pronunciation and applies to domestic TAs too.
- *recruitment*: "Diversity" applies to students from abroad too, and maintaining a balanced population will almost certainly require some concerted effort.
- *campus life and community outreach*: Unless you're getting this far, you're probably not deriving the benefits from international education that your institution cites as its reasons for involvement.

As you examine these factors, you may find that an undermanaged international student program has in fact led—through no one's conscious intent—to conditions that are culturally inequitable on your campus. If that is the case, you and others—and my organization is there to help—will have the opportunity to correct that situation.

I'd like to leave you with a few considerations about the future.

1. Given the times-to-degree, the NRC statistics [on support at the point of exit] are not going to reflect decreases or shifts in foreign student numbers for quite some time. Nevertheless, it does seem likely that the next decade will see the foreign student population shifting again:

- The "new regionalism" we see in Europe, Asia and North America may well lead to a global redistribution of the world's million-plus foreign students.
- It is a valid question whether our education system, at once so successful and much criticized, will continue to exert the global pull it has in the past.
- The economic, political and educational factors that influence students to come to the U.S. from several of the specific countries we have talked about are very volatile. (China has so far defied speculation in that its student numbers experienced not a blip after June 4, 1989, but will it continue to do so?)
- Domestic factors, e.g., U.S. demographic trends, the economy, and specifically the taxation of scholarships, will continue to affect the flows of students from other nations, but in non-linear fashion.

2. This is all too obvious—the graduate students of today are the professoriate of tomorrow. Will the Chinese be allowed to stay after January 1, 1994? It is no coincidence that the H visa is a subject of vehement debate this fall!

3. My personal prediction is that the 90s will be the decade in which international education becomes an EEO issue, not for the reasons Dean Morris was pointing out, but because a broader cross-section of American students will wake up to the fact that they have a right to an education that includes an international component, in preparation for their lives and careers in a world where interdependence is a fact of life.

Finally, I will conclude with a plea that you take *stock of your international programs now. Be sure of your commitments.* Would we be concerned about foreign students if we were not concerned about minority student numbers? I would hope that we would and we will, on grounds both philosophical and pragmatic.

Luncheon

Thursday, December 5, 1991

PRESENTATION OF AWARDS

Gustave O. Arlt Award in the Humanities and the CGS/University Microfilms International Distinguished Dissertation Award

Dr. Jeffrey Hamburger, Assistant Professor in the Department of Art at Oberlin College, and who received his Ph.D. in Art History from Yale University, was one of two young scholars honored on December 5, 1991 at the 31st annual meeting of CGS in Washington, D.C. Dr. Hamburger received the Gustave O. Arlt Award in the Humanities for his book, *The Rothschild Canticles, Art and Mysticism in Flanders and the Rhineland Circa 1300*, published by Yale University Press, 1990. The field of competition for 1991 was Art History. The Arlt Award is given in honor of the late founding president of CGS to a young scholar teaching in the humanities at a North American university who has earned the doctorate within the past seven years, and who has published a book deemed to be of outstanding scholarly significance. Dr. Hamburger is the eighteenth recipient of the award.

The award, consisting of a certificate and $1,000 honorarium, was presented to Dr. Hamburger by Dr. Catherine Lafarge, Dean of the Graduate School of Arts and Sciences, Bryn Mawr College, 1991 Chair of the CGS Board of Directors, and Chair of the Arlt Award Committee. The other members of the 1991 committee were Dr. Julius Kaplan, California State University, San Bernardino; Dr. Richard Schwartz, Georgetown University; and Dr. David Bercuson, University of Calgary.

Dr. Carlos Mastrangelo was the winner of the eleventh annual CGS/ University Microfilms International Distinguished Dissertation Award. Dr. Mastrangelo, who received his Ph.D. from the University of California, Berkeley, in Electrical Engineering and Computer Science is currently employed at Ford Scientific Research in Dearborn, Michigan. The field of competition for the 1991 award was Mathematics, Physical Sciences and Engineering. Dr. Mastrangelo's award-winning dissertation is entitled "Thermal Applications of Microbridges." His innovative work has been described as a "harbinger of an important future direction for microsystems."

Funding for the CGS /UMI Distinguished Dissertation award is made by University Microfilms International. A certificate and honorarium of $1,000 were presented to Dr. Mastrangelo by Dr. Charles Tarr, Dan of the Graduate School, University of Maine, and Chair of the Dissertation Award Committee whose other members for 1991 were Dr. Anthony Barnard, University of Alabama at Birmingham; Dr. Robert P. Guertin, Tufts University; Dr. Henry O. Hooper, Northern Arizona University; and Dr. John D.Wiley, University of Wisconsin-Madison. ■

Business Meeting

Thursday, December 5, 1991, 2:00 p.m.

Presiding: Catherine Lafarge, *Dean of Graduate School of Arts & Sciences, Bryn Mawr College, and Chair, Board of Directors, Council of Graduate Schools*

President's Report: Jules B. LaPidus, *President, Council of Graduate Schools*

Financial Report

President's Report

Jules B. LaPidus

It is always a pleasure to have the opportunity each year to take a few minutes to discuss with you some of the issues and concerns affecting graduate education. In addition, it gives me an opportunity to tell you a little bit about our plans for the coming year, and I should like to start with that. At this meeting you heard a report about our study of master's education in the United States. As you know, that will be published by The Johns Hopkins Press, probably about a year from now. We have made available a summary for you, and we will be using the master's study, along with other materials, to produce a CGS volume on the master's degree that will be consistent with other volumes in our series. A task force will be appointed soon to work on this important task. Our current volume of *The Master's Degree* was basically written in the 1970s, although it was revised several times; clearly, there is a need for a new and updated view of the master's degree in the United States.

We also had a session on the forthcoming study of research-doctorate programs in the United States, and I want to urge any of you who have comments or ideas about that study to send them to me. I will make sure they come to attention of the committee.

The second two publications in our series, *Enhancing the Minority Presence in Graduate Education*, are essentially finished, and you will be receiving copies of them this spring. Between them they provide a variety of examples of kinds of programs that graduate schools can develop to encourage minority students to consider advanced study. Our publication on legal issues in graduate education and research is at the writing stage right now, and we expect a publication out on this by the end of 1992.

Both of our deans in residence are working hard with task forces on publications that we expect to be available during 1992. Jacqueline Looney is developing a brochure on *Models and Resources for Minority Recruitment and Retention* that will describe the actual operation of institutional offices that deal with these issues. Carol Diminnnie is working on a handbook on graduate

admissions that should be extremely useful, not just to deans and administrators, but particularly to faculty on departmental admissions committees. It is a pleasure to have both Jackie and Carol in our office this year, and I'm sure you'll be pleased with the work they produce.

We have a number of projects in mind to start in 1992, one of which will have to do with ABDs and what various universities and organizations are doing to try to facilitate ABDs degree completion. The initial focus of this project will be on minority students, but we expect to expand it as time goes by.

I'd like to comment on some broad issues in graduate education, and the first of these can be divided into the usual good news-bad news format. First of all, the good news. Applications to graduate school are up; graduate enrollments are up; degree production, both master's and doctoral, are at all-time highs; and CGS membership, at 401 institutions, is also at an all-time high. So what is the bad news? The bad news has to do with money. Much of higher education, particularly at the state level, is in perilous financial shape. This year's budgets in most states have been cut, and next year's budgets will be less than this year's. Programs and services are being eliminated. In some cases faculty are being let go, and administrative reorganization, ostensibly to save money, is taking place and, in some cases, this involves graduate schools. We'll be discussing some of these issues at the final session of this meeting.

In many institutions and nationally, there is renewed interest in undergraduate education. This is long overdue and should be applauded. In some cases, however, this interest is seen as being in conflict with graduate education and that should be deplored. This approach is not new, but the relationship between graduate and undergraduate education in a university should not be a zero sum game. We need to be in the forefront of developing better ways to articulate these parts of the university's educational mission. Ernest Boyer's book, *Scholarship Reconsidered*, provides some valuable ideas in this arena.

Last summer, some of you responded to my request for your views on major issues that you faced at your institutions. Most of your remarks centered on the issues just raised; in addition, the following items were cited:

- stipends for graduate students,
- attrition and time to degree problems,
- institutional climate issues for women and minorities, and
- funding for research and facilities.

We will try to provide assistance with all of these issues through articles and other publications and programming at meetings, and we will continue to seek your advice. This may be, indeed, the best the times and the worst of times, and it is of utmost importance that we do not lose our heads. ■

Financial Report for Years Ended December 31, 1991 and 1990

We have engaged Grant Thornton, nationally recognized certified public accountants, 1850 M Street, N.W., Washington, D.C. 20036 to perform a review in 1991 and 1990 of the financial statements of The Council of Graduate Schools. Summarized financial data are provided below. This recapitulation is not a complete presentation of the reports of Grant Thornton and does not contain all the data and informative disclosures required by generally accepted accounting principles.

BALANCE SHEETS

Assets

	1991	1990
Current assets	$ 874,267	$1,031,312
Fixed assets, less accumulated depreciation	32,405	27,897
Endowment fund investments	18,012	18,012
	$ 924,684	$1,077,221

Liabilities and Net Assets

Current liabilities	$ 283,312	$ 515,313
Net assets		
Unrestricted		
General operating fund	623,360	543,896
Restricted		
Endowment fund	18,012	18,012
Total net assets	641,372	561,908
	$ 924,684	$1,077,221

STATEMENT OF REVENUE, EXPENSES AND CHANGES IN FUND BALANCES

Revenue	$1,228,776	$1,130,052
Expenses		
Personnel	554,260	451,331
Research, meetings and travel	268,678	287,582
Office expenses	137,341	143,756
Gustave O. Arlt Award expense	3,282	1,880
Pew Grant expense	157,139	185,437
Ford Grant expense	15,000	17,217
Mellon Grant expense	13,612	11,387
	1,149,312	1,098,590
Excess of revenue over expenses	79,464	31,462
Fund balances at beginning of year	561,908	530,446
Fund balances at end of year	$ 641,372	$ 561,908

Concurrent Sessions 8

Thursday, December 5, 1991, 3:00 p.m.

CHANGING ROLE OF RESEARCH IN MASTER'S PROGRAMS

Presiding: Virginia Falkenberg, *Dean, Graduate Studies and Research, Eastern Kentucky University*

Speakers: Anthony A. Hickey, *Dean of Research & Graduate Studies, Western Carolina University*

Elaine L. Cohen, *Dean, Graduate School, College of Notre Dame*

Wilbur B. Clark, *Graduate Dean, Southern University*

Suzanne Reid-Williams, *Dean, Graduate and International Studies, Western Illinois University*

The Changing Role of Research in Master's-Only Institutions

The Cause for Change

Elaine L. Cohen

With the predominance of professional master's degrees, the role of research is changing. Master of Arts degrees evolved as academic, research degrees. The culmination of these degrees was the thesis, usually six units, along with an oral defense in most cases. Professional master's degrees began as early as 1929 with the Master of Education degree and in 1936 with the Master of Arts in Teaching degree. Although these educational master's degrees did not emphasize research, the thesis was retained in order to command respect. Over time, professional master's degrees have come into their own, have gained the necessary respect they deserve, and the traditional thesis has become an option, has been eliminated completely, or has changed in form and substance. In academic circles, I like to draw this analogy: the academic master's degree with the traditional thesis is viewed as the Mercedes of academe; the professional master's degree with or without a research component is viewed as the Lexus or Infinity of academe. What we must realize is that the Lexus or Infinity degrees are replacing the Mercedes, and are gaining the respect and prestige they deserve, albeit primarily with the consumers of education—the students and public at large—rather than with the academics. Perhaps, the value of those degrees as measured in time, money, and job opportunity is paramount to their success.

Traditional Master's Degrees

Before focusing on the role of research in professional master's degree programs, we need to address the thesis in the academic master's degree. Many authorities contend that the traditional thesis in the academic master's degree is no longer relevant when the degree is the "stepping stone" to the doctoral degree. Although it may give proof of an individual's ability to do research, it might be more beneficial for the student to develop the research effort at the dissertation stage of the doctoral degree. Thus, the culmination of the academic master's degree would be the comprehensive examinations, not the thesis. By eliminating the master's thesis, there would be a more rapid progression toward the completion of the doctoral degree, thereby responding to the criticism of the long time it takes for students to complete the doctoral degree.

Professional Master's Degrees

The main focus of this discussion is the role of research in professional master's degree programs—those that have been typed in the National Study of the Master's Degree as Career Advancement, Apprenticeship, and Community-Centered Programs. For the most part, these master's degrees are terminal degrees. Additionally, students in these professional programs are increasingly older and part-time, and these factors affect the form and substance of the research enterprise.

One may view the master's degree as having four components: the core, the concentration or specialization, electives and a culminating experience. The culminating experience has been traditionally interpreted as the research thesis. In professional master's degrees, the culminating experience has come to mean the internship experience, capstone class, etc. Therefore, in many instances, the thesis has been eliminated or, if given a choice between elective courses or a thesis, students most often choose the course work. In some cases, the department or the program makes the choice of the culminating experience, and due to licensing or credentialing, an internship or a capstone experience may be mandated. Judith Glazer proposes five components for diversified professional master's degrees. ("The Master's Degree: Tradition, Diversity, and Innovation," ASHE-ERIC Higher Education Report No. 6, 1986). These components are the core, concentration, electives, a summative experience and an integrative experience. Thus, the culminating experience is not a choice between research or a capstone class, but includes both in the master's program. The summative experience which is the research component allows the student to go from the general to the specific and study one area in depth while the integrative experience allows the student to go from the specifics to the general and integrates course content and skills. To think that the culminating experience can accomplish both does not do justice to either one. It is this idea which I should like to explore in further detail, especially as it pertains to the role of research.

The Summative Experience

The summative experience is taking a new direction. Instead of the traditional thesis with a committee of readers, a bound work for the library, and a topic deemed important to the field, the research experience is taking the form of a research paper, a grant proposal, a published article, etc. The important outcomes of the research project are familiarity with research design, rudimentary statistics, the ability to read and understand studies, and an appreciation of the need for future research in the field. The substance of the research tends to be empirical studies—a needs assessment in the workplace, a case study over time, a comparison of methodologies and the like. This research may not add to the literature of the field in the traditional sense, but it is important to the seeker of a professional degree and to the profession itself. The research project or a "tangible product", as it is termed by the National Study of the Master's Degree, may be associated with a specific course, certain faculty who like to work with students on an individualized basis, and have a defined time period. It represents a practical approach to the student working on a professional degree.

One question which remains regarding research in professional fields relates to the research standards set by the professional accrediting agencies. Thus we need to look at the accrediting bodies in the fields where most graduate students matriculate. AACSB, the American Assembly of Collegiate Schools of Business, does not require a research component for the Master of Business Administration degree. Although AACSB seeks to have business faculty involved in research, it usually does not trickle down to students. NCATE, the National Council on the Accreditation of Teacher Education, proposes research in its Standard IE, but it can be loosely interpreted, i.e., content should include experience in Evaluation, Inquiry and Research. AAMFT, the American Association for Marriage and Family Therapy, supports the notion of research so students can become informed consumers of research and allow them to make critical judgements as to the accuracy of reports. This statement does not imply the requirement for a thesis. In fact, the Board of Behavioral Science Examiners, the California licensing board for Marriage, Family, and Child Counselors, in its 1988 revision of the law no longer stipulates research as one of the ten content areas in the Master's degree. The conclusion one must reach is that research in the traditional interpretation is not mandated for accredation of professional master's degrees in institutions of higher education; however, evidence of some experience with research is desirable.

The Integrative Experience

It is probably the integrative experience that is viewed as the most important component of a professional master's degree today. This integrative experience takes the form of a capstone class integrating knowledge and skills, an advanced seminar, practical/internship experiences, a recital, exhibition, etc. Although skills may be taught inconsequentially throughout the degree

program, it is the integrative experience that pulls together an evaluation of such skills as communication, problem-solving, decision-making, valuing, transference, and application. In the integrative experience, knowledge of the academic core curriculum is reexamined and evaluated with the notion that the whole is larger than the sum of its parts. This culminating experience may be collaborative. It may involve the student with other students, the student with faculty, or the student with employer. With the advent of Outcomes in Education or the thrust of Assessment, this area of graduate education will be increasingly more important.

Recent Concerns

Other practical considerations regarding the role of research at master's-only institutions are related to the state of higher education in the 1990's. Public colleges and universities are under tremendous financial pressures. Cuts in expenditures may affect released time faculty have for student advising of research, reduced library resources, and reductions in research assistants. In fact, at the small private college where I am Dean, we have instituted initial and final reading fees in order to pay faculty readers of the research. Another consideration is the criticism that institutions of higher education have lost sight of their teaching function, particularly at the undergraduate level. It is only a matter of time before the importance of teaching over the research function will reach the master's-only level. Traditional research may be left to the domain of the large research universities granting doctoral degrees. Lastly, it is the consumers of education such as the professionals in the field, the employers, and the graduate students themselves that are going to determine the role that research is going play in a professional master's degree. These considerations are just a few in addition to the obvious ones of cost-effectiveness and cost-benefit of a master's degree.

The Future of Research

In relation to research in master's programs, there are three A's upon which to reflect: (1) Access—Is the traditional research thesis a means of access to the doctoral degree? (2) Assessment—Is the traditional research thesis the best means of evaluating the graduate student or the program? (3) Accountability—Is the traditional research thesis of benefit to the consumers education? In all the aforementioned cases, I would contend that traditional research in the form of thesis does not meet these criteria. What is important is non-traditional research, i.e., new forms and methodologies of research that are practical and meaningful to the vast majority of master's seekers and their constituencies. ■

CAN THE MASTER'S DEGREE SURVIVE AS A STEPPING STONE TO DOCTORAL EDUCATION?

Suzanne Reid-Williams

I find it very difficult to disagree with Dean Clark's remarks. But I am an economist and I do think that the market has a lot to say about what is happening and what will happen to the Master's degree. Certainly everyone in the room has ideas about the future of graduate education at the masters level and whether the traditional masters degree, the stepping stone to the doctorate can survive or whether masters level education will inexorably move toward professionalization, toward the masters as a terminal degree (a term which I very much dislike since I associate it with dying and I don't think that the masters degree is dying). I am taking the position that masters level education, especially at masters level institutions, is very much alive, but is becoming increasingly terminal and moving more and more toward a practice orientation and professionalization and away from the traditional stepping stone to the doctorate.

In graduate education, we talk about two major kinds of graduate degrees: research degrees and professional degrees. The CGS publication "graduate school and you" defines and discusses the two kinds of degrees. According to that publication, at the masters level, the research masters provides experience in research and scholarship and may be a final degree or may be a step toward the doctorate. The professional masters degree, according to the same publication, gives a specific set of skills needed to practice a particular profession and is generally the final degree. What that booklet does not emphasize is the increasing proportion of practice oriented and professional masters degrees relative to research masters degrees. In her book "The Masters Degree," Judith Glazer points out that, in 1985, 84% of the masters degrees awarded were professional degrees. The "National Study of the Masters Degree," which was presented on Wednesday, cited 85 percent. Included in that 85% are not only business, education and engineering but also agriculture, ethnic studies, communications, computer science, public affairs, theatre arts and more. But that 85% does not recognize that many of our traditional research oriented masters degree programs are becoming increasingly professionally oriented, as well.

At my institution, Western Illinois University, in 1990–91, we awarded 533 masters degrees. Of these 49 percent were professional degrees in education, business, theatre and accounting and 51 percent were master of arts or master of science. But among the master of arts, and master of science degrees were programs in broadcasting, gerontology, communication sciences and disorders, law enforcement administration, college student personnel, computer science, recreation and park administration, physical education/sport management, and health education. These professionally oriented master of arts and master of science programs amounted to just over half of the M.A. and M.S. degrees, bringing the total professional degrees to 75 percent of all of the

degrees awarded by our university. What about the 25 percent in the traditional research oriented M.A. and M.S. programs? Again, at our university, many of the traditional liberal arts and sciences have developed professional tracks in the masters programs: english as a writing option aimed primarily at careers in community college teaching, editing, or writing. Political science has public administration, geography has planning and meteorology, history is providing courses and internships in archives, psychology has clinical and school options. Even our biology program is highly field oriented. Thus a high proportion of graduates of the traditionally research oriented masters degree programs are being professionally educated and are not going on to doctoral study. Of our graduates in the last five years, those in mathematics had the highest proportion going on the Ph.D. study with 59 percent. Biology had 39 percent, economics 28 percent, history 31 percent and on to English at 8 percent and music at 7 percent.

But didn't some of the graduates of the professional programs go on to doctoral study? Very few. In the last five years, computer science had 8 percent and business had 6 percent. Most of the professionally oriented programs sent no one on to doctoral study.

I don't believe that the low percentages going on to doctoral study are a reflection of the quality of our students or of our programs since the graduates do seem to find excellent employment in most cases. In fact, as masters study becomes more practice oriented, more professional and primarily terminal, it is imperative that we maintain quality and that we maintain the difference between graduate and undergraduate study. In institutions such as ours which are predominately bachelors and do not offer doctoral degrees, there is a tendancy to blur the difference between graduate and undergraduate study. The national study of the master's degree indicated some attributes of quality including a core learning experience and a tangible completion product. Even though our programs are increasingly practice oriented, professional and terminal, they should retain a core that includes the underpinnings of the discipline: the theory, methodology, history and ethics of the discipline. And even though many programs are dropping the thesis as a degree requirement, one culminating experience should be required which is integrative, that causes students to bring together information from their various courses and to apply that information to solving real problems, and a culminating experience that is also summative, that asks students to pursue information beyond that given in their classes. Even though the masters degree is increasingly professional, practice oriented, and terminal it should not become a fifth year program involving simply the accumulation of 30 hours of coursework. It should remain graduate education.

As I gathered some of our data related to masters degree recipients, one thing did stand out. The proportion of international students receiving the masters degree and going on the doctoral study was much higher than the proportion of international students in our masters programs. It is obvious that a high proportion of our international students do feel that the masters

degree is a stepping stone to the doctoral degree. This was not at all unexpected, but it did, once again, lead me to a concern about a number of our programs. Since most of the programs are professionally oriented and most of our students do not go on for doctoral study and our programs are primarily designed for these students, are we really providing reasonable academic opportunities for those international students who do plan to go on to doctoral study? I should argue that, in most cases, we are not.

In her book "The Masters Degree," Judith Glazer states that "The Master of Arts and the Master of Science are of little utility in arts and sciences doctoral programs. While the M.A. and the M.S. could be strengthened by mandating that everyone obtain an intermediate degree before completing requirements for the doctorate ... the 30 to 32-credit M.A. or M.S. is not necessarily relevant for the doctoral student ... as a first year of graduate study, it has little meaning." I would tend to agree by stating that the first year of doctoral study should be designed as part of the doctoral plan. Further, designing the masters degree as a pre-Ph.D. is not serving our market.

As with our institution, I suspect that many if not most of you have similar data with respect to the proportion of your masters degree students who will go on to doctoral study. And I suspect that the proportion will steadily decline over the next five years as public attention focuses more and more on the "utility" of education. Increasingly I find that I am justifying our graduate programs in terms of employment opportunities for recipients of the masters degree and increasingly I am asked for that kind of information by our governing boards, by prospective students and by others. Our public does not value the masters degree as a stepping stone to the doctorate. Few of our students use it as a stepping stone to the doctorate. The masters degree is overwhelmingly professional, is largely terminal, and is practice oriented. We should design our master's degree programs to be "terminal" not pre-Ph.D. or Mini-Ph.D. Programs, but at the same time, the programs must remain graduate programs with the quality attributes of graduate programs. ■

Plenary Session V

Friday, December 6, 1991, 9:00 a.m.

WHAT TO DO WHEN MONEY RUNS OUT: THE ADMINISTRATION OF GRADUATE EDUCATION UNDER CONDITIONS OF SEVERE FISCAL CONSTRAINT: VALUES AND OPTIONS

Presiding: Richard Attiyeh, *Dean, Graduate Studies and Research, University of California, San Diego*

Speaker: Donald N. Langenberg, *Chancellor, University of Maryland System*

Panel: Robert G. Jensen, *Dean, Graduate School, Syracuse University*

Mack Johnson, *Associate Vice President for Graduate Studies, Research & International Programs, California State University, Northridge*

Debra W. Stewart, *Graduate Dean, North Carolina State University at Raleigh*

Marching to a Different Tune

Donald N. Langenberg

Good morning! It's good to find myself back among graduate deans. A fondly remembered part of my own academic career was spent or misspent, as the case may be) as one of you. I trust that you are still wrestling with the fundamental issues of our academic enterprise, and continue to champion its basic values. I assume you are still beset by infidels and philistines, and continue to be underappreciated, underpaid, and overworked. Some things never change.

According to legend, when Lord Cornwallis' army surrendered at Yorktown in 1781, General Washington allowed his defeated opponent to retire with honor. The British marched out of their positions in parade order, with regimental bands playing. One of the tunes to which they marched had the title *The World Turned Upside Down.* The tune was aptly chosen, for the world indeed turned upside down that day at Yorktown, both for the grenadiers of the world's most powerful empire and the colonial musketeers who defeated them. One wonders how many of them fully comprehended what had happened.

I'm convinced that the familiar academic world in which most of us have spent our careers is turning upside down. It's a slow but inexorable process, rather like an ocean liner capsizing. I doubt many of us fully comprehend what is happening, or what its future consequences might be. That something *is* happening, however, I have no doubt.

The symptoms are all around us. We have reached what one of my colleagues in the Pew Higher Education Research Program has called "the end of sanctuary." Our institutions have become frequent objects of tabloid journalism. This past year we have seen the president of one major university indicted for fiscal malfeasance, another charged with violation of scientific integrity, and still another publicly excoriated in a congressional hearing. Intercollegiate athletics continue to be a fertile source of scandal. In one of those curious near-instantaneous linguistic flip-flops, "PC" has ceased to stand for " personal computer." Intemperate book-length attacks on higher education regularly hit the Times' best-seller list (though happily they're still rare at airport newsstands). Almost everyone seems upset with us because we've given up teaching our students, because we are giving too little or too much emphasis to issues of cultural and ethnic diversity, because we're letting "them" (fill in your favorite "them") take over our campuses, because we're bloated, irresponsible, cost-ineffective bureaucracies, because we haven't solved any major social or economic problems lately, and, occasionally, because we don't win enough football games.

And now comes budget cuts deeper and more pervasive than any we've seen since the Great Depression of the Thirties. Early last summer, the American Association of State Colleges and Universities (AASCU) issued a special mid-year update on its annual survey of the budgets and fiscal conditions of public colleges and universities. AASCU reported that public institutions in twenty-nine states had experienced mid-year budget cuts. The cuts averaged 3.9%, and ranged from a high of 10% in Virginia down to 1% in three states. Institutions in some states, my Maryland included, experienced more than one mid-year cut in FY91.

Nothing much has changed in the five months since that AASCU report appeared. By all accounts, the fiscal hemorrhaging continues. Mid-year cuts are being made again this year. Stories of layoffs are not uncommon. This year public colleges and universities in nearly half of our states averaged tuition and fee increases of more than 10%. Our public institutions are experiencing a decline in the portion of their dollars provided by state tax fund appropriations, raising serious questions about the legislatures' and the public's ability, or perhaps willingness, to support quality higher education. Nor has private higher education escaped the problems that I've outlined. Though their sources of income are somewhat different, private institutions, too, are struggling with fiscal problems matching those of their public cousins.

So what should we do about all this? Should we cope as best we can and await better days, when we can return to business as usual? I think not. Behind today's budget crisis run much more powerful and longer-lasting currents of change, to which I think we must not fail to respond. I do not doubt that there is a better future beyond today's budget crises, but I do doubt that it can closely resemble our past. Our circumstances simply will not allow that.

I do not see state tax-based appropriations returning to their former levels in the near future. I think many of my colleagues in university and college

presidencies would agree. One of them remarked recently that he would not be surprised if, when we gathered at some meeting just after the turn of the century, we would agree that 1991 had been the best year of the nineties for higher education. In light of the way this year has gone for many of us, that's a pretty dismal forecast. Dismal or not, I think it stands a pretty good chance of being right. It follows that we're going to have to find a way to live on less for quite a while. And that means that we'll have to add to our traditional cherished academic values several new ones to which we've heretofore given scant attention. They include "productivity" and "efficiency." Getting serious about productivity and efficiency is the *only* feasible way to survive and even prosper in the face of dwindling resources.

Let me hasten to say that I do not view this prospect with gloom. Rather, I find it exciting. I invite you to consider Alfred North Whitehead's observation that "the great ages are unstable ages." Our current budget woes provide a heaven-sent opportunity to rethink and to refit our universities as we prepare them for their voyages into a new century. We have a rare chance to deal with some long-standing problems. Things are possible in times like these that would be unthinkable in better times. As a member of my external advisory council has remarked, now is the time to transform a few sacred cows into useful hamburger.

Several months ago, I appointed a group to explore ways in which my own family of institutions, the University of Maryland System, could best respond to the necessity of cost containment and the strategic redeployment of resources. After much internal discussion and widespread solicitation of ideas and options, the group has compiled a list of suggestions that runs to eleven single-spaced pages. The list isn't yet closed; most people who look at it think of one or two things to add.

Most of the items on that list are aimed at what Peter Drucker has recently called "the single greatest challenge facing managers in the developed countries of the world," that is, "to raise the productivity of knowledge and service workers." That is precisely our problem.

The manner in which our institutions produce their principal products, learning in students (and, sometimes, others), new knowledge, and professional services to a variety of clienteles, has not changed in any essential respect in my lifetime. Our institutions have, however, grown greatly in size and affluence, and have changed in character. Student enrollments and faculty numbers have grown, but the numbers of non-faculty employees (" administrators") have grown much more rapidly. Productivity has not increased noticeably, and may well have fallen.

I will not recount here all the good and not-so-good reasons for these trends. Suffice it to say that the growth of the "administrative lattice" has been accompanied by an inexorable turning of the "faculty ratchet," and that the two have driven each other. The "faculty ratchet" refers to the uni-directional shift of faculty attention from collective institutional interests and teaching toward individual professional interests and research. The result has been

productivity-sapping structural distortions in our institutions that have grown to a state that is no longer supportable with the resources we can expect to command. We need to address them in both the administrative lattice and the faculty ratchet.

Let me describe an interesting example from our list of options, one on the faculty ratchet side.

You're all familiar with the eternal debate about teaching versus scholarship and research. Interest in this issue has been heightened on many campuses by growing external demands to do something about the quality and quantity of teaching. Our critics say our faculty need to spend less effort on research and more on teaching students, undergraduates particularly. Our faculty say they'd be happy to do so if only success in teaching were recognized and rewarded as success in research is. Everybody argues about who's to blame for the distorted reward system that's said to be the cause of it all. Nobody seems to have found a way to fix it in a way that's both effective in achieving institutional goals and fair and equitable to all the many diverse faculty individuals who must deliver the product. Let me suggest one that might do the trick.

Let us focus on that eternal basic academic organizational unit, the disciplinary department. This is the stable and continuing entity that is *really* responsible for the production of our principal products in specific regions of the intellectual landscape. Let us develop measures and indicators of the quality and quantity of each principal product in each discipline, and use them to establish production goals for the *departments*, not for individual faculty members. That is, let us say to the physics department, for example, "You are responsible for teaching elementary physics courses from which the majority of student acquire a passion for physics and the skills to pursue a physics major, should they so choose. You are responsible for graduating ten or more baccalaureate majors each year, all of whom gain admission to at least one of the nation's leading graduate programs. You're responsible for producing at least twenty Ph.D. graduates per year, at least two of whom receive post-doctoral appointments with Nobel laureates. You are responsible for producing one hundred publications per year in refereed journals, with an average citation frequency in the five years after publication that places them in the upper quintile. You are responsible for winning one or more Nobel prizes each decade. You are responsible for producing at least one invention each decade from which license income to the university exceeds one million dollars."

"Now, you go figure out how to do those things. Figure out how best to deploy your faculty and financial resources to maximize your performance, in terms of these measures. It won't be easy, but nobody in this university is better equipped than you do decide what do and how to do it. To the extent you succeed, you will be rewarded with above average salary increase funds, in which you will all share, as well as lots of other goodies. If you don't do so well, too bad, you'll all suffer."

Some people think that's a really crazy idea. After all, the excellence of our universities is founded on the Lone-Ranger Scholar, isn't it, the towering independent individual intellect to be found at the source of any worthwhile idea or discovery. This notion of *collective* responsibility and accountability is unAmerican and possibly a violation of academic freedom. Wait while I call the AAUP for an opinion.

I say that's balderdash. Team scholarship, with success or failure riding on the collective performance of the team, is already a fact of life in many fields of research. To draw another example from one of our universities' principal public service activities, intercollegiate football, I'm told there are those who can remember when college football players commonly played both offense and defense and, not infrequently, in several different positions. Charming, no doubt, and in the best tradition of amateur athletics. But one of our highly specialized modern teams, with each team member doing what he does best, could run any of those grand old fashioned teams right off the field.

The real difficulty with this proposal, of course, is in devising suitable and effective measures and indicators of performance. Nevertheless, I refuse to believe that a community that has learned how to measure the distance to the farthest galaxies and to predict the outcomes of elections before they occur can deem it impossible to determine the quality and quantity of its own principal products. Difficult, perhaps, and a major research challenge in itself, but not impossible. Moreover, the evidence is growing that if we do not do this for ourselves, others will do it for us. We probably won't like the results.

That's but one example of the kind of unthinkables I think we need to think about and act upon. It's not my idea, by the way, though I think it's a good one. You will find it explicated more eloquently in the most recent issue of *Policy Perspectives*, from the Pew Higher Education Research Program. It is from my fellow members of this Program that I have learned the value of thinking the unthinkable. I commend the practice to you. It's not only good clean fun; the survival of your university may depend on it.

Before I relinquish the podium, I thought you might like to hear what members of my staff unearthed while attempting to satisfy a mutual curiosity about *The World Turned Upside Down*. The words go as follows:

If buttercups buzzed after the bee;
If boats were on land and churches on sea;
If ponies rode men, and if grass ate the cows;
If cats should be chased into holes by the mouse;
If mommas sold their babies to gypsies for half a crown;
If summer were spring, and the other way 'round,
Then all the world would be upside down.

They were sung into several different tunes, one of which was also known by the title *When the King Enjoys His Own Again*. Let me leave you with the hope that, if we all think and act creatively and courageously as our world turns upside down, we will live to see a day when our universities enjoy their own again. ■

Good Morning! Jules LaPidus has provided us with a timely theme. I readily accepted Jules's invitation to participate in this session because the options for graduate education, given both the reality and prospect of declining resources, has been much on my mind lately. I expect most of us gathered here today face a similar circumstance, so it is good that we have this opportunity to share our experiences and compare our responses.

Chancellor Langenberg has set the stage for our discussion this morning and he has posed a broad challenge:

- *Think the unthinkable and don't plan to return to business as usual because our familiar academic world is slowly, but inexorably, turning upside down. The unthinkable may be possible in these times and this may create an opportunity to deal with some long-standing problems.*
- *Respond to declining resources by increasing the productivity and efficiency of our academic enterprise. This is the* only *way to survive and perhaps even prosper.*
- *Focus on the academic department in terms of its* collective *responsibility to meet clear production goals in teaching and research, as defined by performance indicators, and allocate incremental resources in accordance with the units* collective *success (or failure).*

I am sure we will want to explore these challenging suggestions during our discussion with special reference to graduate education. Some may question the extent to which a corporate model can be used to design fiscal plans in an academic setting. Others may wonder whether collective responsibility, as outlined by Chancellor Langenberg, is appropriate at the level of our smallest academic units and whether we can define our "product lines" in relation to clear production goals that will be sensitive to the quality and quantity of multifaceted responsibilities in teaching, research, and service. I expect we will not reach closure on these issues today. Nonetheless, we can all probably sense a growing demand for better assessment of performance by institutions of higher education and if we are unwilling to meet that demand by establishing appropriate measure, others, as Chancellor Langenberg notes, may do it for us. I am confident we heard that warning and that we will work to avoid that result, especially in our graduate schools.

In comparison to the issues raised by Chancellor Langenberg, my charge this morning is relatively modest. I have been asked to share with you some of my own views and experience, derived from being a graduate dean during difficult times at a particular institution, namely Syracuse University. Since our panel was selected to represent a range of graduate schools in different kinds of institutions. Let me begin by providing some information that will enable you to place Syracuse in a national context.

Syracuse is a private university that has been a member of the Association of American Universities (AAU) since 1967. It is classified as a Carnegie

Research II institution and annually awards approximately 180 doctoral degrees and 1,500 master's degrees (excluding law) in more than 200 graduate programs, 60 of which offer the Ph.D. The current main-campus enrollment includes about 5,000 full and part-time graduate students and 11,500 undergraduates. In addition to the liberal arts, Syracuse has a broad range of professional graduate programs in 13 schools and colleges. And like many independent universities, Syracuse is heavily dependent on revenue from undergraduate tuition and fees.

During the 1980s Syracuse University experienced increased enrollments and benefited from improving the overall quality of the entering freshmen classes. Full-time undergraduate enrollment reached a high 12,500 in the Fall of 1989. Given current demographic trends, which are especially negative in the Northeast, and in order to maintain quality standards, Syracuse University is planning to downsize its undergraduate enrollment to approximately 10,000 undergraduates by the fall of 1993. To achieve and adjust to that target, we are developing a multi-year academic and fiscal plan to restructure the University. The fiscal plan will probably require a 15 percent reduction on the expenditure side over a four-year period. Although we are still engaged in campus-wide discussions of alternative strategies, several guiding principles are already clear. Budget reductions will not be across the board, but instead will be targeted strategically after a careful assessment of schools and colleges using the criteria of quality, centrality, and demand as the basis for reallocating resources among academic units. Although quality and centrality will fundamental criteria, I expect increasing emphasis to be placed on demand as defined by enrollment.

Naturally, as Dean of the Graduate School, I am especially concerned about the impact of restructuring on the graduate enterprise. Our new Chancellor, Kenneth A. Shaw, has made it clear that he supports a "continued emphasis on graduate education in defining the quality and essence of our University." But it is equally clear, as in most graduate and research universities today, that more of our energy and resources will be refocused on "undergraduate learning." Our challenge, therefore, is to continue strengthening graduate education while sharply improving the quality of the undergraduate experience. This would be difficult in the best of circumstances. During a period of declining resources, it will be necessary to reassess our priorities in both undergraduate and graduate education and in doctoral education, especially, it will be imperative to reallocate resources to our strongest departments and specializations. Thus, at the graduate level, our Vice Chancellor for Academic Affairs has suggested that we will concentrate resources on a somewhat smaller number of doctoral programs to achieve a higher average quality. In response to declining undergraduate enrollments, he has also suggested a proportionate reduction in the number of graduate teaching assistants. On the other hand, Syracuse is likely to expand a number of professional master's programs that show potential for increasing tuition revenue.

With that background, I now want to respond more directly to my charge by sharing some of my limited experiences as a graduate dean. I accepted my present appointment in July 1990 after serving nearly two decades as chair of one of Syracuse's stronger graduate departments. I was attracted to the position for several reasons. Syracuse made a decision to divide its long standing position of Vice President for Research and Graduate Studies into two separate positions, both of which would report directly to the University's Chief Academic Officer. Thus I would become the first person to hold the singular title of dean of the Graduate School in more than 30 years and I took this to mean that there was a perceived need for graduate affairs to be more firmly integrated into University-wide planning. At any rate, I held the view that such integration was desirable and that it would be both an opportunity and a challenge to become more centrally involved in such a process. In the context of restructuring, the need for more strategic planning in graduate affair becomes readily apparent.

The mission of our Graduate School, as I see it, is to advance graduate education and to provide leadership in the development of strategies and resources to enhance the quality of graduate programs and the quality of the graduate experience more generally. These aims, of course, are shared with departments, schools, and colleges, but the Graduate School is the only unit for which that mission is the raison d'être on a University-wide scale. While such aims are indeed shared on our campus, the options for effectively advancing graduate education have clearly been narrowed by fiscal constraints associated mainly with declining undergraduate tuition revenues. This will be the case until we have made the transition from 11,500 to 10,000 undergraduate students. But a tighter budget is not the only obstacle to advancing the cause of graduate education. An increasing institutional focus on the undergraduate experience often makes it difficult to obtain an appropriate place for graduate affairs on the University's agenda. This combination of factors, I have found, makes the role of the graduate dean, as a principal advocate for graduate education, especially difficult. In times of restructuring, moreover, the graduate dean must also justify the operations of the Graduate School office, the cost of which can be viewed as a tax paid by academic units for services, by demonstrating the benefits it provides to schools and colleges and to the overall well-being of the University. The Graduate School at Syracuse, I believe, is successfully responding to these challenges and, although our circumstances may differ from yours, I would like to mention several projects that have benefited graduate affairs and earned positive reviews on our campus.

One of our Graduate School's important functions is the conduct and administration of the all-University Teaching Assistant Program. Established in 1987, this program has made an order of magnitude difference in the performance of more than 750 teaching assistants at Syracuse. The program not only enhances graduate training, but also links the Graduate School to one of the central concerns on the University's agenda, namely the improvement

of undergraduate teaching. The success of the Teaching Assistant Program provides leverage for the Graduate School in the competition for University resources and has enabled us to win high-level support for a major expansion of program activities during the next five years. If you have not been involved in TA training, I would strongly recommend that you explore the possibilities.

With more than 5,000 full and part-time graduate students, one might assume that it would be relatively easy to focus the University's attention on improving the overall quality of the graduate-student experience. I have not found this to be the case, although everyone agrees it is important. Part of the problem, I concluded, was that we had little in the way of systematic information concerning the perceptions of our graduate students. In the spring of 1991, therefore, the Graduate School administered the first survey of the graduate population since 1949. The survey, though it was a complex five-page instrument, generated a 43 percent response and produced new and valuable data documenting graduate perceptions of the quality of academic life, student services, and financial support. Survey findings were of great interest to both academic and service units and the Graduate School has been able to use the resulting database to generate special reports requested by various units to guide academic and service improvements. Among the recommendations developed from the survey were a set of *Standards for Departmental Practice* which we hope to implement in all graduate programs during 1992–93. The *Standards* focus on five elements that are ingredients for a quality graduate experience: advising, orientation, leadership, communication, and progress assessment. These elements are in place in most of our programs, but survey results pointed to a need for improvements, especially in graduate advisement and departmental communication with graduate students. The survey and related efforts have attracted considerable attention and have provided a foundation for the University to demonstrate its concern for graduate students and to offset a sense that graduate affairs may be ignored at the expense of a more visible focus on undergraduate concerns. We invested considerable time and energy in the survey, but I am confident the results were more than worth the effort. We plan to conduct the survey on a biennial basis to track our progress in improving the graduate experience.

Finally, let me comment on the need for strategic planning in graduate affairs. During times of budgetary strain and restructuring such planning would appear to be essential and require the central involvement of the Graduate School. This has been one of my major concerns as a new graduate dean. Unfortunately, Syracuse does not have a tradition of a strong central Graduate School (some might say, fortunately!) and for that reason, in part, we are now only in the early stages of developing a graduate student information system to support strategic planning in graduate affairs. Moreover, because we are heavily dependent on undergraduate tuition, undergraduate enrollment has long been managed, whereas graduate enrollment (on a University-wide scale at least) is essentially uncontrolled and related tuition income and expenses, therefore, have been largely excluded from the budget

and planning process. For these reasons, I have made the development of a graduate information system, which provides systematic data at the program level, a priority of the Graduate School. Initial results have already contributed to current University planning efforts and have been appreciated by deans and program directors who use our data in developing their own academic and fiscal plans as well as a variety of other reports.

The one aspect of our information system that may be of interest, especially to those of you from private institutions, is the capacity we have developed to provide detailed information on graduate tuition expenses and revenues at both the aggregate and program level. Now that the system is in place, we are producing reports each semester that divide the total graduate tuition expenditure of each program into expense and revenue components, which allows a calculation of "net" tuition income. These data are now being used in University fiscal planning and have provided a better understanding of some of the direct benefits and costs of graduate education. You may be interested to know, even in this limited sense, that our graduate programs make a positive overall contribution to the income stream of the University. Needless to say, this makes my job as an advocate of graduate education somewhat easier!

Thank you very much for your attention. I can't be sure my comments have been useful, but I have surely enjoyed participating in this session. I look forward to our open discussion. ■

M. I. Johnson

Unless you are just out of a prolonged slumber, you are aware that the State of California is in the midst of budget problems—the likes of which may be unparalleled in the recent history of the state. The State's budget problems have been widely reported and discussed in the press. The State Legislature recently "fixed" (I use fixed advisedly) a $14 billion dollar budget shortfall by raising taxes, not only on junk food as some of you might think, and cutting spending. Having done so—almost immediately there was the realization that the "fix" was not in fact a complete fix. When the Legislature returns in January—information available to us indicates that the State will be facing an additional $3 billion dollar deficit and the deficit is growing. So, to the extent that I have any thing useful to say, it may—"in the words of Ron Zeigler" be inoperative come this spring. What that translates into in a very real sense is that we face the prospect of a "mid-year reduction." Should this circumstance eventuate, we will be facing a challenge that is much more than—with the words of Barbara Solomon earlier this week, an "invaluable learning experience." We will be required to do things differently in higher education in the State and quite obviously in graduate education as well.

To context my comments, I should say a few words which will hopefully characterize my institution which is rather different from the institutions

represented by my colleagues on the panel. California State University, Northridge is a comprehensive university with approximately 32,000 students and is one of the 20 universities in The California State University. We have approximately 6 thousand post-baccalureate students of which three thousand are actually in graduate degree programs. My institution awards Master's degrees in some 40 fields. I should also tell you that the University's budget is very tightly enrollment driven—a situation that has not provided a particularly large fund source over which the institution could exercise discretion in the best of times. Our primary mission is teaching. We do not have a history or tradition of extensive support for graduate students nor an extensive graduate administrative infrastructure.

In view of the fact that we have already sustained reductions in the current academic year (as part of the $14 billion fix), we are already down to and into the muscle—and are on a collision course with bone. There are no substantial additional savings to be realized from further reductions in travel, operations, equipment and the like. We are well into personnel reductions throughout the university. Simply put, we have reduced at the margins to the extent we can. Part-time faculty have been laid off and support for these/projects and graduate coordinators has been reduced.

What does all of this mean for graduate education at my institution—or others like it? First, I should assure you that at this juncture, I do not have any magical formulas for coping with increased financial constraints. I believe that each situation is likely to be of sufficient uniqueness that models will be of limited applicability. Moreover, in times of financial austerity, most institutions ultimately make budget reductions based on established priorities. While we have not done this to the extent that I believe we should have—we are currently engaged in a campuswide process of establishing priorities which hopefully will guide us in making future reductions.

Let me briefly characterize the atmosphere/climate in which I find myself operating. I rather suspect that many of you face these same circumstances. Applications and student fees are increasing, while our ability to provide student and faculty support is decreasing. Fortunately, we have been able to maintain some semblance of constancy in the number of graduate assistantships—thanks in large part to the State's holding graduate equity programs harmless in appropriations. At minimum, we are being asked to do the same with less money—there is no doubt in my mind that soon we will be asked to do more with less.

Given our current circumstance there are two overarching issues which we (the faculty and administration) believe to be of top priority—they are ACCESS and PROGRAM QUALITY. Unlike some, I do not believe that these are mutually exclusive concepts. The Master Plan for the State of California mandates that we provide access; it is up to me and the faculty to assure program quality. With respect to graduate programs and quality pertaining thereto, we will and have begun to analyze and discuss changes that

may be implemented which will permit us to use our resources, both financial and human, more effectively and efficiently.

We have come to the realization that across the board reductions are no longer a viable option. The results of applying this strategy, over time are well understood—affecting most severely, program quality. I have already alluded to the fact that we have some 40 Master's degree programs. Do we have too many? Should there be some realignment of programs? What are our obligations to our community and the larger society? Discussions of these types of issues with faculty is perhaps the most important thing that I can do. Quit candidly, some of our programs are not what I would like for them to be.

If there is a silver lining associated with our continuing budget problems—it may well be that in time we will be forced to make some decisions relative to downsizing, reorienting, and/or restructuring of the graduate program on my campus that we have simply had neither the will nor the courage to do otherwise. Indeed, if we step up to the table and take a critical look at what we do and how we do it—I believe we will be able to chart a course that will serve us well in the future. As an extension of what Chancellor Langenberg suggested, we will not only think the unthinkable, but more importantly, we will do what we now think is undoable. Our future is in front of us. Along this line, let me conclude my remarks with a quote from Lincoln, "the best thing about the future is that it comes one day at a time."

Thank you. ■

MANAGING CUTBACKS: A VIEW FROM THE SOUTH

Debra W. Stewart

The story that I have to tell you this morning from North Carolina, and more specifically from my own institution North Carolina State University, is one that will be familiar to my colleagues in state colleges and universities on the east and the west coasts over the past two years. Dr. Langenberg this morning has described the financial future for colleges and universities as "dismal," noting that 1991 might just have been the best year of the 1990's for higher education. While my fundamentally optimistic nature prevents me from concluding that the future is necessarily dismal, I would certainly have to grant that the past two years have been financially dismal to say the least.

In North Carolina we have experienced reductions in state revenues, triggering the need for cuts in allotments of state funds to public universities. The cuts have come in the form of reversions as well as permanent cuts. In this kind of environment a reversion becomes a positive phenomenon, an event to be welcomed because it holds promise of restoration next year.

The actual impact on the universities of these clearly necessary state actions are often magnified by three factors. In many states there has been an effort on the part of state legislators and governors to buffer certain institutions from cuts when the revenues drop. Given the current national alarm about the state

of primary and secondary education in our country, many state authorities, including the decision makers in North Carolina, took great pains to protect this sector of education from the fallout of revenue shortfall. Of course the corollary of this action is that unprotected institutions are forced to absorb a higher percentage of the cuts. State universities, often viewed as the jewel in the crown of the educational establishment in the United States, will be increasingly targeted for disproportionate cuts to the extent they are seen as institutions having this greater cut-absorption capacity. Second, many states fail to recognize revenue shortfalls until well into the budget year. The impact of this is to increase the burden of an across the board cut. Clearly it is much more difficult to absorb a 15% cut in operating budget if that cut is taken midyear since operating budgets are typically expended on a monthly basis. Finally, there appears to be an increased inclination to identify expenditure areas to be frozen, thereby reducing the capacity of university administrators to manage the cuts in a locally appropriate fashion.

I have spoken about these trends in a global sense. At North Carolina State University we have had the opportunity to respond to all these scenarios over the past two years. The actual numbers in North Carolina are not easy to explain because there have been a combination of reversions that do not affect the base budget and permanent cuts that do. In the end it appears that we have absorbed about a 5% cut on state appropriated funds over two years. The university budget is $486,000,000; the state appropriated portion of that budget is $233,400,000. Because of a clear preference in the legislature to protect the teaching budget, we have experienced far greater cuts in the administrative units.

There are two general activities in which we at the graduate school at North Carolina State University have engaged that have allowed us to sustain cuts while continuing to preserve and advance the cause of graduate education at the University. While I must admit that I did not have the foresight to undertake these activities solely because I anticipated cuts, in retrospect I would recommend them as the best cut back insurance you can buy. The first strategy is defensive; the second is offensive. Both are necessary.

As a defensive strategy, I would simply echo Chancellor Langenberg's admonition to take productivity and efficiency seriously. It is essential that each graduate school institute a process by which the core purposes of the graduate school can be articulated, advanced, and ultimately judged meritorious when university dollars are scarce. The graduate dean must assume leadership in enhancing the efficiency of the core functions of the graduate school, making sure that graduate school dollars are standing behind graduate school values. This often involves internal reallocation and typically requires decreasing certain less important functions in order to institute or enhance more important ones. Precisely how this is done will vary with institutional context but the invariant here is quite simple. It is essential that graduate deans keep their dollars aligned with their values. Maintaining this kind of alignment requires constant vigilance.

The second strategy for dealing with a cutback environment is to go on the offensive. In other words, I would urge my fellow graduate deans to take responsibility not only for protecting and advancing graduate education but also for finding the resources to pay for it. There are two fundamental targets of opportunity in this regard. The first is the federal fellowship and traineeship area and the second is politely called private resource development. At North Carolina State University the graduate school in the last four years has undertaken major initiatives on both of these fronts. With respect to federal traineeships and fellowships, our university has made dramatic strides in a relatively short period of time. This has been achieved primarily by the graduate school initiative directed toward displaying more visibly existing national graduate program strength. For virtually every fellowship opportunity or traineeship opportunity identified, we have convened groups of faculty and facilitated their effort to express their programs in the forms of large scale proposals. Most of these proposals have been cross-departmental and interdisciplinary in nature, reflecting the fundamental truth that many of the most important opportunities for research and graduate training are occurring at the interface of disciplines. Characteristic of demands for new knowledge is that the challenges rarely come wrapped in disciplinary packages. At NCSU we have been willing to respond to the intellectual problems as those problems are posed; hence we have historically had strength in interdisciplinary intellectual activity and programmatic development. The facilitation of this development has naturally required an investment from the graduate school perspective. But I am firmly convinced that when state dollars are scarce there may be no better investment that a graduate school can make than allocating or reallocating its resources to this arena. How it is done and the particular vehicles that are used again will vary depending upon the local conditions, but the general strategy of leveraging state dollars to increase success in federal traineeship programs remains constant.

The second arena of activity has been in private resource development. Again, local conditions vary with institutions in the CGS membership. These reflect the entire spectrum of private fundraising organizational structures, from highly centralized to highly distributed. Whatever the structure, graduate deans are increasingly concluding that there is benefit to be gained from the establishment of an external board of advisors or an advisory council to the graduate school composed of individuals who have the capacity to take leadership roles in private resources development activities. At my own institution we have established a NCSU Board of advisors for the graduate school. The purpose of our board is not exclusively fundraising, and indeed a primary contribution that I anticipate from this board is to provide general advice from constituencies with which we would not normally interact in the process of conducting graduate education at the University. However, assisting in developing private resources for graduate education at the University is an extraordinarily important mission for the Board; through a committee designated to accomplish that goal, we are currently working in that direction.

In attempting to raise private funds for the support of graduate education, it is important to remember that the conventional wisdom in the world of development is that dollars for merit based university wide graduate fellowships are the hardest dollars to raise. Some development professionals consider such dollars unraisable. While it may be true that graduate education sponsors are not as liberally spread through the population as those who support their undergraduate programs, we have found at North Carolina State University a distinguished collection of individuals who are motivated by the challenge of raising dollars for graduate education. These dedicated individuals are currently hard at work on our resource development committee of the Board of Advisors.

A secondary benefit of such a board if it includes opinion leaders at the state level is that it may have a positive impact on state funding for graduate education. If properly selected, these individuals can serve as advocates for graduate education among critical constituencies in the state. Such public education activities are not ones that most graduate deans are well equipped to conduct on their own.

This then summarizes the strategies that we have undertaken at North Carolina State University for managing cutbacks in times of fiscal stress. From my background in public administration, I am well aware of the strategies that local government units developed to cope with the severe fiscal stress that confronted those organizations beginning in the early 1980's. The literature assessing response to fiscal stress at the local level tells us that "effective managerial performance is equated with the ability of top management [either] to shape their organization's activity mix to the requirements of its existing environmental niche or to create new conditions for organizational growth."[1] This statement rings true based upon my own experience as a graduate dean. The only difference is that the decision is not an "either-or" scenario. It is essential for graduate deans in moments of fiscal stress to both align resources with goals and to raise external money to support the enterprise. I commend both strategies to you and I commend them with the conviction that Chancellor Langenberg is fundamentally right when he tells us that our current budget woes provide a heaven sent opportunity to rethink how we do things in universities.[2]

REFERENCES

[1] Charles H. Levine, Irene Rubin, George G. Wolohojian, *The Politics of Retrenchment*, Beverly Hills, CA., Sage Publications, 1981, p. 209.

[2] Donald N. Langenberg, "Marching to a Different Tune," Presented at the 31st annual meeting of the Council of Graduate Schools, Washington, DC December 6, 1991, p. 5. ■

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THE CONSTITUTION OF THE COUNCIL OF GRADUATE SCHOOLS

(as revised July, 1991)

1. Name

This organization shall be called the Council of Graduate Schools, hereinafter referred to as the "Council."

2. Purpose

The Council is established to provide graduate schools with a comprehensive and widely representative body through which to counsel and act together.

Its purpose is the improvement and advancement of graduate education. The purview of the Council includes all matters germane to this purpose. The Council shall act to examine needs, ascertain best practices and procedures, and render assistance as indicated; it may initiate research for the furthering of the purpose. It shall provide a forum for the consideration of problems and their solutions, and in meetings, conferences, and publications shall define needs and seek means of satisfying them in the best interests of graduate education. In this function the Council may act in accordance with the needs of the times and particular situations to disseminate to the public, to institutions, to foundations, to federal, state, and local governments, and other groups whose interest or support is deemed of concern, information relating to the needs of graduate education and the best manner of satisfying them.

In the analysis of graduate education, in the indication of desirable revision and further development, in the representation of needs and all other functions related to effecting its purpose, the Council not only shall be free to act as an initiating body, but it shall assume direct obligation for so doing.

3. Membership

Membership in the Council of Graduate Schools shall be in the following categories: Regular, Sustaining, and Contributing. All members shall be aware that the Council is devoted to excellence in graduate education as interpreted by occasional position statements outlining philosophies, policies, and procedures of graduate education. Applicants for membership must demonstrate continuing commitment to and support of graduate education, and shall display evidence of qualifications as prescribed by the Council. All applications will be reviewed and evaluated by the Council's Membership Committee, which will bring its recommendations to the Executive Committee for action.

A. *Regular Membership*. Institutions of higher education in the United States and its territories and Canada that are significantly engaged in graduate education, research, and scholarship, and the preparation of candidates for advanced degrees are eligible for Regular Membership.

Applicant institutions must already have been approved to offer graduate work by the appropriate regional/provincial accrediting authorities, and shall have awarded a total of at least thirty master's degrees or ten doctoral degrees (or combination thereof) in at least three distinct and separate fields or disciplines within the three years immediately prior to the date of application. Applicant institutions must also have a formally organized administrative unit responsible for graduate affairs.

B. *Sustaining and Contributing Membership.* Profit and nonprofit organizations such as research institutes; testing and evaluation corporations; philanthropic and charitable organizations; federal, regional, and state agencies; public and private research and development corporations that are committed to fostering graduate education and research and that support the objectives of the Council may be eligible to become sustaining or contributing members. Such organizations must recognize the value of quality graduate education across a broad range of scholarly, technological, and creative endeavors. Through their participation and financial contribution they help the Council carry out its central mission and purpose, while gaining access to its resources and activities. Levels of contribution for sustaining and contributing members shall be set by the Board of Directors.

Members in all categories shall be listed (separately and/or so designated) in the CGS Membership Directory, and receive the same generally distributed information and mailings.

Regular, Sustaining, and Contributing Members may attend CGS meetings and other sponsored functions. However, Sustaining and Contributing Members shall not have voting rights nor be eligible to hold elected or appointed offices in CGS. The Council neither endorses nor represents the interests of Sustaining or Contributing Members.

4. Voting Power

In all activities of the Council, each regular member institution shall have one vote. More than one representative of any institution may attend the meeting of the Council, but the vote of the member institution shall be cast by the individual designated by the chief administrative officer of the member institution as the principal representative of the institution.

5. Officers and Board of Directors

There shall be a Board of Directors of twelve voting members, composed of the Chair, the Chair-Elect, the Past Chair, and nine members-at-large. Three members-at-large shall be elected annually by the members of the Council in the manner specified in Article 8 for terms of three years that begin immediately after the Annual Meeting. CGS regional affiliates are provided formal Board participation as specified in Bylaw 7.

The Chair-Elect, chosen by the Board of Directors from its own past or present membership, shall serve in that capacity for one year. The following

year the Chair-Elect will assume the office of Chair, and the following year, the office of Past Chair. In the absence of the Chair, the Chair-Elect shall be presiding officer of the Board of Directors and the Council.

Each voting member of the Board of Directors must be the principal representative of an institutional member of the Council and none may serve for two consecutive full terms.

If the Chair is unable to continue in office, the Chair-Elect shall succeed immediately to the Chair, and the Board of Directors shall choose a new Chair-Elect.

Any vacancy occurring among the membership-at-large of the Board of Directors shall be filled in the manner specified in Article 8. In the interim, the position shall be filled by an appointee of the Board of Directors.

6. Executive Officers

The chief executive officer of the Council shall be a President, who shall be a salaried officer, appointed by the Board of Directors and serving at its pleasure. The President shall serve as an ex-officio member of the Board of Directors without a vote.

7. Duties and Powers of the Board of Directors

In addition to the duties and powers vested in the Board of Directors elsewhere in this Constitution, the Board of Directors may specifically employ such staff and establish such offices as may seem necessary; incorporate; undertake itself, or through its agents, to raise funds for the Council and to accept and expend monies for the Council; take initiative and act for the Council in all matters including matters of policy and public statement except where limited by this Constitution or by actions of the Council.

8. Committees

In addition to the Board of Directors, there shall be an Executive Committee of the Board of Directors, a Nominating Committee, a Committee on Membership (whose members shall not be members of the Board of Directors), and such other standing committees as may be established by the Board of Directors.

Except for the Executive Committee and the Nominating Committee, all standing committees and ad hoc committees shall be appointed by the Chair with the advice and consent of the Board of Directors. All committees shall be chaired by regular members of the Council.

The Executive Committee shall consist of the Chair, Past Chair, Chair-Elect, and two other Board members elected annually by the Board of Directors. The President of the Council shall be an ex-officio member of the Executive Committee.

To the extent determined by the Board, the Executive Committee shall have the authority of the Board in the management of the affairs of the

Council in the intervals between meetings of the Board. The actions of the Executive Committee shall be reported at the next meeting of the Board of Directors.

The Nominating Committee shall consist of five new members each year, three of whom shall be elected by the members of the Council. Two shall be members of the Board of Directors. The Chair of the Committee shall be the Past Chair of the Board. The one other Board member shall be elected by the Board from its members-at-large who are in the last year of their terms.

At least sixty-one days before each Annual Meeting of the Council, the Nominating Committee shall propose to the members of the Council two nominees for each member-at-large position of the Board of Directors to be filled, including residual terms of vacated positions, and two nominees for each member-at-large position of the Nominating Committee. These nominations shall be made only after suggestions accompanied by supporting vitae have been solicited from the membership-at-large.

The election shall then be held by mail ballot and the nominees receiving the larger numbers of votes for the positions to be filled shall be declared elected. In case of a tie vote, the Nominating Committee shall break the tie.

9. Meetings

The Council shall hold an Annual Meeting at a time and place determined by the Board of Directors. The Council may meet at other times on call of the Board of Directors.

The Board of Directors shall be responsible for the agenda for meetings of the Council. Reports and proposals to be submitted for action by the Council shall be filed with the Board of Directors before they may be submitted for general discussion by the Council. No legitimate report or proposal may be blocked from presentation to the Council, but action on any proposal may not be taken until the Board of Directors has had an opportunity to make a recommendation.

In matters not provided for in this Constitution, parliamentary procedure shall be governed by Robert's Rules of Order, Revised.

10. Limitations of Powers

No act of the Council shall be held to control the policy or line of action of any member institution.

11. Dues

The level of membership dues shall be determined by the Board of Directors. The Board shall have authority to increase dues in any year by no more than three (3) percent above the percentage increase in the Consumer Price Index (CPI) during the previous 12-month period. Larger dues increases must be approved by the majority of the membership voting after due notice. The Board of Directors' authority to increase dues is limited to five (5) years; renewal of that authority requires approval by a majority of the members voting after due notice.

12. Amendments

Amendments to this Constitution may be proposed by the Board of Directors or by written petition of at least one-third of the members. However they originate, proposals for amendments shall be received by the Board of Directors and forwarded with recommendations to the members, in writing, at least ninety days before the meeting at which they are to be voted upon or before formal submission to the members for a mail ballot. To be adopted, proposed amendments must receive the approval of a two-thirds majority of the members voting at the announced meeting or on the designated mail ballot.

Bylaws

Bylaws may be established by the Board of Directors at any regular or special meeting, subject to ratification by a simple majority vote of the Council at the next Annual Meeting.

BYLAWS

1. In conformity with Article 6 of the Constitution, the President of the Council of Graduate Schools shall be paid an annual salary to be determined by the Board of Directors plus such perquisites as may be necessary for the proper conduct of the office and such travel as may be deemed essential. The President is authorized to employ such personnel as necessary for the proper conduct of the office, to establish bank accounts in the name of the Council of Graduate Schools, and to draw checks and invest monies against the Council's account or accounts, subject to an annual audit of the books of the Council by a Certified Public Accountant and approval by the Board of Directors.
2. Depositories for funds of the Council shall be designated by the Board of Directors.
3. In the event of the dissolution of the Council of Graduate Schools, all then existing assets of the Council shall be distributed in equal parts to the institutions that will at the time be members of the Council.
4. The fiscal year of the Council shall correspond to the calendar year.
5. In the event of the death or disability of the President of the Council, the Chair shall immediately call a meeting of the Board of Directors to select an Acting President, who shall assume the responsibilities of the President, as they are specified in Article 6 of the Constitution and Bylaws 1 and 2, until the appointment of a new President.
6. Applications for Regular Membership must include statements endorsed by the chief executive officer and the chief graduate officer of the applicant institution. These statements shall include information as to the following:

   a) The institution's accreditation for graduate work as determined by the appropriate regional or provincial accrediting authority.

b) The number of graduate degrees awarded in the three years immediately preceding the application for each applicable field or discipline in which graduate degrees are awarded.

c) A general description of the criteria used in determining faculty participation in graduate programs, i.e., the level of training and the scholarly/creative productivity of the faculty members in the institution's graduate program.

d) The degree of centrality of graduate education to the nature and purpose of the institution ad evidenced by its budgetary commitment to graduate programs, the existence of special facilities or resources in specific and support of graduate education, and, in the case of appointments, promotion, and tenure, the degree of importance placed on faculty contributions to graduate and scholarly/creative work.

e) The extent of the institution's acceptance of existing Council policy statements setting forth standards for the organization of graduate study.

7. A regional organization of graduate schools that becomes associated with the Council of Graduate Schools shall be known as CGS affiliate. Eligibility for CGS affiliate status is limited to a) existing regional organizations of graduate schools, or b) any such organizations subsequently established and having membership of at least fifty institutions. An eligible organization becomes a CGS affiliate upon approval by CGS's Board of Directors of a letter from a duly authorized officer of that organization stating its intent to become an affiliate. No fee is required to become a CGS affiliate.

   Formal participation of the regional associations in CGS is provided by liaison representatives to the CGS Board. Each regional association will designate a member to serve in that capacity. In the event that the liaison representative is already a member of the CGS Board, that individual will serve in a dual capacity. The appointment of a liaison representative does not preclude direct communication between CGS and officers of the affiliates. In determining any joint position held by CGS and its affiliates, the governing bodies of each must have adopted such a position using their own procedures. When agreement has been reached, CGS shall be able to represent the position as one held in common by CGS and its affiliates. Article 10 of the Constitution of CGS shall apply to any such determination.

PROCEDURAL POLICIES

1. Annual meetings of the Council shall be held during or near the first week of December.
2. If a member resigns, it must reapply for admission in the normal way if it wishes to resume membership.
3. Institutions accepted to membership in any given year shall be required to pay prorated dues on a quarterly basis for that fiscal year.

CGS MEMBER INSTITUTIONS

CANADA

Concordia University
McGill University
McMaster University
Universite de Montreal
Universite du Quebec
Universite Laval
University of Calgary
University of Guelph
University of Ottawa
University of Toronto

UNITED STATES

ALABAMA

Auburn University
The University of Alabama
The University of Alabama at Birmingham
The University of Alabama in Huntsville
University of South Alabama

ALASKA

University of Alaska Fairbanks

ARIZONA

Arizona State University
Northern Arizona University
University of Arizona

ARKANSAS

Arkansas State University
University of Arkansas
University of Arkansas at Little Rock
University of Central Arkansas

CALIFORNIA

California Institute of Technology
California State Polytechnic University, Pomoma
California State University, Bakersfield
California State University, Chico

California State University, Fresno
California State University, Long Beach
California State University, Los Angeles
California State University, Northridge
California State University, Sacramento
California State University, San Bernardino
The Claremont Graduate School
College of Notre Dame
The Fielding Institute
Holy Names College
Loma Linda University
Loyola Marymount University
Naval Postgraduate School
Pepperdine University
San Diego State University
San Francisco State University
San Jose State University
Santa Clara University
Stanford University
University of California, Berkeley
University of California, Davis
University of California, Irvine
University of California, Los Angeles
University of California, Riverside
University of California, San Diego
University of California, San Francisco
University of California, Santa Barbara
University of California, Santa Cruz
University of San Diego
University of San Francisco
University of Southern California
University of the Pacific

COLORADO

Colorado School of Mines
Colorado State University
University of Colorado at Boulder
University of Colorado at Denver
University of Denver
University of Northern Colorado

CONNECTICUT

Quinnipiac College
Sacred Heart University
University of Bridgeport
University of Connecticut

University of Hartford
University of New Haven
Wesleyan University
Yale University

DELAWARE

University of Delaware

DISTRICT OF COLUMBIA

The American University
The Catholic University of America
Gallaudet University
The George Washington University
Georgetown University
Howard University
University of the District of Columbia

FLORIDA

Florida A & M University
Florida Atlantic University
Florida International University
Florida State University
Nova University
Stetson University
University of Central Florida
University of Florida
University of Miami
University of South Florida

GEORGIA

Clark Atlanta University
Emory University
Georgia Institute of Technology
Georgia Southern University
Georgia State University
Medical College of Georgia
University of Georgia

HAWAII

University of Hawaii at Manoa

IDAHO

Idaho State University
University of Idaho

ILLINOIS

Bradley University
Concordia University
DePaul University
Eastern Illinois University
Illinois Institute of Technology
Illinois State University
Loyola University of Chicago
Northeastern Illinois University
Northern Illinois University
Northwestern University
Sangamon State University
Southern Illinois University at Carbondale
Southern Illinois University at Edwardsville
The University of Chicago
University of Health Sciences, The Chicago Medical School
University of Illinois at Chicago
University of Illinois at Urbana-Champaign
Western Illinois University

INDIANA

Ball State University
Indiana State University
Indiana University
Purdue University
University of Notre Dame

IOWA

Iowa State University
The University of Iowa
The University of Northern Iowa

KANSAS

Emporia State University
Fort Hays State University
Kansas State University
Pittsburg State University
The University of Kansas
Wichita State University

KENTUCKY

Eastern Kentucky University
Morehead State University

Murray State University
Spalding University
University of Kentucky
University of Louisville
Western Kentucky University

LOUISIANA

Grambling State University
Louisiana State University and A & M College
Louisiana State University Medical Center
Northwestern State University of Louisiana
Southern University
Tulane University
University of New Orleans
University of Southwestern Louisiana

MAINE

University of Maine

MARYLAND

Bowie State University
Coppin State College
The Johns Hopkins University
Morgan State University
Towson State University
University of Maryland Grad School, Baltimore
University of Maryland, College Park
University of Maryland, Eastern Shore
University of Maryland, University College

MASSACHUSETTS

Assumption College
Bentley College
Boston College
Boston University
Brandeis University
Bridgewater State College
Clark University
Emerson College
Fitchburg State College
Framingham State College
Harvard University
Lesley College
Massachusetts Institute of Technology

Northeastern University
Salem State College
Tufts University
University of Massachusetts at Amherst
University of Massachusetts at Boston
University of Massachusetts at Lowell
Worcester Polytechnic Institute

MICHIGAN

Andrews University
Central Michigan University
Eastern Michigan University
Michigan State University
Michigan Technological University
Northern Michigan University
Oakland University
University of Michigan
Wayne State University
Western Michigan University

MINNESOTA

Mankato State University
St. Cloud State University
University of Minnesota
Walden University

MISSISSIPPI

Jackson State University
Mississippi State University
University of Mississippi
University of Southern Mississippi

MISSOURI

Central Missouri State University
Northeast Missouri State University
Saint Louis University
Southwest Missouri State University
University of Missouri, Columbia
University of Missouri, Kansas City
University of Missouri-Rolla
University of Missouri-St. Louis
Washington University

MONTANA

Montana State University
University of Montana

NEBRASKA

Creighton University
University of Nebraska at Omaha
University of Nebraska Medical Center
University of Nebraska-Lincoln
Wayne State College

NEVADA

University of Nevada-Las Vegas
University of Nevada-Reno

NEW HAMPSHIRE

Dartmouth College
University of New Hampshire

NEW JERSEY

Drew University
Fairleigh Dickinson University
Glassboro State College
Montclair State College
New Jersey Institute of Technology
Princeton University
Rutgers University, Newark Campus
Rutgers-The State University
Seton Hall University
Trenton State College
University of Medicine & Dentistry of New Jersey

NEW MEXICO

New Mexico State University
The University of New Mexico

NEW YORK

Adelphi University
Alfred University
Brooklyn College of CUNY
City College of the City University of New York
City University of New York Graduate School & University Center
Clarkson University
College of New Rochelle
College of Saint Rose
Columbia University

Cornell University
Fordham University
Hofstra University
John Jay College of Criminal Justice
New York Institute of Technology
New York Medical College
New York University
Pace University
Polytechnic University
Queens College of the City University of New York
Rensselaer Polytechnic Institute
Rochester Institute of Technology
The Rockefeller University
Sarah Lawrence College
St. Bonaventure University
St. John's University
State University of New York at Binghamton
State University of New York at Buffalo
State University of New York at Stony Brook
State University of New York Health Science Center at Brooklyn
State University of New York Health Science Center at Syracuse
Syracuse University
The University at Albany, State University of New York
The University of Rochester
Yeshiva University

NORTH CAROLINA

Appalachian State University
Duke University
East Carolina University
Meredith College
North Carolina Agricultural & Technical State University
North Carolina Central University
North Carolina State University at Raleigh
University of North Carolina at Chapel Hill
University of North Carolina at Charlotte
University of North Carolina at Greensboro
University of North Carolina at Wilmington
Wake Forest University
Western Carolina University

NORTH DAKOTA

North Dakota State University
University of North Dakota

OHIO

Air Force Institute of Technology
Bowling Green State University
Case Western Reserve University
Cleveland State University
Hebrew Union College—Jewish Institute of Religion
John Carroll University
Kent State University
Medical College of Ohio
Miami University
The Ohio State University
Ohio University
The University of Akron
University of Cincinnati
University of Dayton
University of Toledo
Wright State University
Youngstown State University

OKLAHOMA

East Central University
Oklahoma State University
The University of Central Oklahoma
University of Oklahoma
University of Oklahoma Health Sciences Center
The University of Tulsa

OREGON

Oregon State University
University of Oregon

PENNSYLVANIA

Bloomsburg University of Pennsylvania
Bryn Mawr College
California University of Pennsylvania
Carnegie-Mellon University
Drexel University
Duquesne University
Gannon University
Hahnemann University
Indiana University of Pennsylvania
Lehigh University
Medical College of Pennsylvania
The Pennsylvania State University

Shippensburg University
Temple University
Thomas Jefferson University
University of Pennsylvania
University of Pittsburgh
University of Scranton
Villanova University
West Chester University
Widener University

PUERTO RICO

Inter American University of Puerto Rico
University of Puerto Rico, Mayaguez Campus
University of Puerto Rico, Rio Piedras Campus

RHODE ISLAND

Brown University
Rhode Island College
University of Rhode Island

SOUTH CAROLINA

Clemson University
Medical University of South Carolina
South Carolina State College
University of South Carolina

SOUTH DAKOTA

South Dakota School of Mines & Technology
South Dakota State University

TENNESSEE

Austin Peay State University
East Tennessee State University
Memphis State University
Middle Tennessee State University
Tennessee State University
Tennessee Technological University
The University of Tennessee at Martin
The University of Tennessee, Knoxville
The University of Tennessee, Memphis Center for the Health Sciences
Vanderbilt University

TEXAS

Abilene Christian University
Angelo State University

Baylor College of Medicine
Baylor University
East Texas State University
Lamar University
Rice University
Southern Methodist University
Southwest Texas State University
Texas A & M University
Texas Christian University
Texas Southern University
Texas Tech University
Texas Woman's University
Trinity University
University of Houston-Clear Lake
University of Houston-University Park
University of North Texas
The University of Texas at Arlington
The University of Texas at Austin
The University of Texas at Dallas
The University of Texas at El Paso
The University of Texas at San Antonio
University of Texas Grad School of Biomedical Sci at Galveston
University of Texas Grad School of Biomedical Sci at Houston
University of Texas Grad School of Biomedical Sci at San Antonio

UTAH

Brigham Young University
University of Utah
Utah State University

VERMONT

University of Vermont

VIRGINIA

College of William and Mary
George Mason University
Hampton University
James Madison University
Old Dominion University
Radford University
University of Virginia
Virginia Commonwealth University
Virginia Polytechnic Institute and State University

WASHINGTON

Central Washington University
Eastern Washington University
Seattle University
University of Washington
Washington State University
Western Washington University

West VIRGINIA

Marshall University
West Virginia University

WISCONSIN

Marquette University
Medical College of Wisconsin
University of Wisconsin-Eau Claire
University of Wisconsin-Madison
University of Wisconsin-Milwaukee
University of Wisconsin-Oshkosh
University of Wisconsin-Stout

WYOMING

University of Wyoming

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